employed in rendering the church a holy and a beautiful house. It is in thorough harmony with what has now been said that just as the common and universal faith of man has been faith in God, just as the very oldest of existing literatures—the Hebrew and the Sanskrit—are very largely occupied with God, even so the oldest and stateliest monuments of the world are buildings which in one form or another owe their origin to the religious instincts of humanity, and have been reared and used for the worship of God. While all other traces of the pagan worship of our forefathers have long since disappeared, the Druid circles of Stonehenge and of other places still remain. The round towers of Abernethy, and of Ireland, are, with the exception perhaps of a few existing words, the only memorials which remain of the far-back age to which they belong. The very oldest, the very highest, and the very largest, of all existing monuments, the pyramids of Egypt, were reared on the strength of a religious idea, and perhaps served the end of worship. The majestic piles of Thebes and Luxor were temples. The Parthenon, the most architecturally perfect of all buildings, is a temple. The genius and the wealth of ancient Rome could produce no more superb structure than the Pantheon, with its fine portico and its bronze roof, resembling the azure vault of heaven,—and the Pantheon is a temple. Overtopping the city of the Seven Hills, with its 360 churches, rises St. Peter's; and high above the roar of London towers the dome of St. Paul's. Thus, in all time, and in every land, palaces yield the palm to churches and temples. This truth has been beautifully put by another: "How striking a proof is it of the strength of the adorning principle in human nature,—what an illustration of mankind's sense of depending upon an unseen Supreme, that the grandest works which the nations have reared are those connected with religion. Were a spirit from some distant world to look down upon the surface of our planet as it spins round in the solar rays, his eye would be most attracted as the morning light passed onwards by the glittering and painted pagodas of China, Borneo, and Japan; the richly-ornamented temples and stupendous rock-shrines of India; the dome-topped mosques and tall slender minarets of Western Asia; the pyramids and vast temples of Egypt, with their mile-long avenues, of gigantic statues and sphinxes; the graceful shrines of classic Greece; the Basilicas of Rome and Byzantium; the semi-Oriental church domes of Moscow; the Gothic cathedrals of Western Europe; and as the day closed the light would fall dimly upon the ruins of the grand sun-temples of Mexico and Peru." If men of all times, of all colours, of all creeds, have thus spent their best on what they believed to be best, the worship of God, this general agreement of mankind is surely more than a proof of the adorning principle; it is some indication of the will of God for all men.

The preacher then went on to illustrate and enforce his arguments. To show that there were clearer indications of the will of God in this matter, he instanced, first, the Tabernacle in the wilderness, built by a nation of slaves, who had been but a few months before delivered from the servitude of centuries, built by the command, and according to the plan of God, as the grateful offering of an emancipated people. So hearty was their response to this appeal, that women brought their golden ear-rings, and there was more than enough, so that Moses had to restrain the outflow of their benevolence. The result was, that that first church ever reared for the worship of the true God, considering the people who built it, and the place and time of its building, "exceeded in costliness and splendour any cathedral of the present day, when compared with the wealth of the surrounding population." Then, if ever, might selfishness or cautious thrift have asked with show of plausibility, what need for any costly edifice for divine service? Then, if ever, might He who dwelleth not in temples made with hands, have looked down well pleased on the rudest hut which poverty ever reared as a place of praise? For where could nobler *natural* temple be found than the unrivalled scene which spread around the builders of the Tabernacle; its floor, that broad, smooth plain of Rahab; its walls before, behind, around, on every side the granite ribs of the everlasting hills; their jagged peaks its pinnacles, and the glorious Arabian sky its dome? And yet *there*, in that grandest of all natural cathedrals, Sinai before them, and the hills around, the command of God goes forth, "Let them make *Me* a sanctuary, that I may dwell among them."

He then alluded to the second church built by God's command,—the Temple of Solomon.

After describing its splendour and massiveness,—and some of its stones are still standing, and may until the final consummation of all things,—he said:—"Beautiful beyond all parallel must that Temple have been when in its glory it crowned the steeps of Zion. And what I wish you specially to remark is this,—that while the cold and calculating spirit of our age would be apt to murmur at all this blaze and glitter of gold as a useless display, an unnecessary outlay of wealth even for an age and a religion where symbolism was indispensable, it did not seem so in the eyes of Him for whom this Temple was reared. He was well pleased with the offering, and filled that Temple with His glory, and chose it as a house to dwell in."

From all this he submitted that there was a principle which seemed pretty clearly established, viz., that God means us when we worship Him, to do it with our very best. If the devotional feelings of the human heart naturally crave for decorous expression; if even the Pagan in his blindness could rear, out of love to God, temples which will for ages yet be the wonder of the world; if this natural and universal impulse has received the direct imprimatur of Heaven, the only two churches ever built by God's direct command being gems of art, treasure-houses of wealth and beauty; then, he submitted, there are here a set of facts on which Protestant Christians would do well to ponder. He knew the wide gulf which separates Christianity from Judaism, but, he asked, is the God of the Jew a different God from that of the Christian? Is the Old Testament the Bible only of the Jew, and not also of the Christian? He submitted that keeping clearly in view the difference between the two religions, the symbolism of the one, and the spirituality and sublime simplicity of the other, we could learn from God's dealings with His ancient people, His will regarding ourselves, that in all which pertains to worship down from the very stone and lime of the building, up to its almsgiving, its preaching, its praise, its prayer, up to the innermost spirit of the worshipper, we are to give God of our very best for His dear Son's sake; and, in all respects, the lowest as well as the highest, from the altitude of the body up to the altitude of the soul, make His Church "a body and a beautiful house."

IS EDUCATION ESSENTIAL TO IMPROVEMENT IN DWELLINGS AND HABITS OF LIFE.*

Let sanitary truths be taught in every school: we shall then, at least, secure the knowledge to the rising generation. But we shall do more than this: the parents will be reached through the children; the information taught at school will be carried home to the cottage. It will do more than this: it will permeate up to the middle-class, some sections of which are as destitute of sanitary knowledge as any of our labouring poor,—yes, and it may permeate higher still. Every one wishes to have good health and to live as long as possible; yet the very knowledge by which life and health are secured is ignored in every system of education, from the highest to the lowest.

As regards Government aided schools, I should like to see the Government grant in aid made contingent on the teaching of sanitary information. There are many elementary works that might be used for reading-lessons that would convey the information, such as—the worth of fresh air, the value of pure water, the value of good food, the influence of wholesome drinks, the gain of a well-trained mind. Let this teaching be one of the conditions for the receipt of the grant in aid, and the subject will soon be generally and well understood. If we do this the next generation will not pass through life without securing the desired improvements.

There are already a large section of the labouring class in a position to command the desired homes, if they appreciated them; there are, at the present time, thousands of mechanics and artizans in this country, earning wages ranging from four to ten shillings per day, who are content to domicile their families in dwellings that cost them from three to four shillings per week rental, while they spend on stimulants and tobacco for their own personal consumption four times the amount of rent they pay. Improve their wants, and they are in a position to give effect to improved desires. How would it aid the health, comfort, and happiness of this class, if only one-fourth of the amount they now spend on stimulants were withdrawn from that expenditure and directed to home expenses? As regards the mechanic, artizan, and mining population of this country, they are already in a position to command the improved houses if they desired them.

The chief causes of pauperism are incapacity, improvidence, and disease; the two first are the direct offspring of ignorance, and the latter is largely promoted by ignorance: to get rid of pauperism we must get rid of ignorance—that is to say, to avoid the perpetuation of the evil, we must remove the producing cause.

Let us review the subject. On the one side we have the mechanic, artisan, and mining classes, earning high wages, and, for want of a correct appreciation, they spend a large portion of their earnings in debasing, instead of raising their condition. On the other hand, in many localities, especially in agricultural districts, there are labourers beyond the requirements of the district,—men, till a few years since, hedged in by the law of settlement to a limited market for their labour,—men still destitute of sufficient intelligence to give them adaptability of mind or body to take their labour into channels where the supply of labour is inadequate, where it would be useful and profitable to others, and, consequently, remunerative to themselves. The schoolmaster is wanted to each class; to teach the one the capacity to earn; to teach each the wisdom to spend; and, in thus doing, to improve their households. And there are many reasons for securing elementary education during the early years of childhood.

Do not infer from my remarks that I imagine the working classes are not improving; I believe we see many evidences that they are improving; there are evidences of this in their co-operative institutions, in their mutual assurance societies, their accumulations of capital in savings-banks: all these evidence economy, which means temperance and self-denial. The implements of the labouring class are accumulated capital. Professor Levi, who is regarded as an authority on the subject, estimates that there are 300,000 carpenters, joiners, and shipwrights, each of whom requires tools costing from 10*l.* to 50*l.*; at an average of 20*l.* per man they amount to 6,000,000*l.* But there is still very much more to be done. Some have to be educated to the power to earn more, others have to be educated to spend more wisely the incomes they so readily command; as these two teachings progress, I have much confidence that they will have a healthful and happy influence on the homes and the habits of the labouring classes.

* From a paper (printed at Chippenham by G. Noyes), titled "Is the better Education of the Labouring Population Essential to any General Improvement in their Dwellings or Habits of Life?" Read at the Ruridecanal Conference held at Chippenham, August 25th, 1870. By Mr. James S. Randell.

REPORT OF THE METROPOLITAN BOARD OF WORKS.

The annual report of the Board, just published, brings together a number of interesting items of information of both prospective and retrospective character.

The principal performance of the Board during the past year has been the completion and opening of the Victoria Embankment on the Thames, from Westminster Bridge to Blackfriars. The estimated complete cost of the work is 1,200,000*l.*, and for the purchase of property and compensations, 450,000*l.* The Southern Embankment had also been completed and opened during the year. The cost had been 309,000*l.*, and 771,616*l.* for property. The chief portion of this work remaining to be completed is a landing-pier near the end of Church-street, in return for a draw-dock at Ferry-street.

With regard to Queen Victoria-street, authorised by the Metropolis Improvement Act of 1863, about 900 ft. of the street have been opened. Three lots of building-ground in the new street have recently been offered on lease by auction, and for two of these lots satisfactory offers have been received and accepted. The Board still retains on hand the large and valuable triangular piece of land near the Mansion House, a satisfactory offer not having been made for the plot. The claims and compensations for property in the street, made by freeholders, leaseholders, yearly tenants, tenants at will, &c., dis-

posed of as reported, amounted to,—claims, 2,612,106*l.* 9s. 9d., settled by payments of 1,990,377*l.* 18s. For properties on the Embankment,—claims for 426,207*l.* 13s., had been settled by payments of 273,499*l.* 10s.

The estimated amount to be expended in metropolitan improvements, in progress or authorised, is 897,000*l.*,—namely, for Stingo-lane improvement, 50,000*l.*; main drainage and main sewers, 497,000*l.*; Park-lane improvement, 123,000*l.*; Chelsea Embankment, 135,000*l.*; contributions to minor improvements, and for completion of Finsbury and Southwark Parks, and Whitechapel and Kensington improvements, 77,000*l.*; and fire brigade (capital account), 15,000*l.*

The new assessment shows an increase in the annual value of the property of the metropolis of 2,462,000*l.*, or from 16,257,000*l.* in 1868-9 to 18,719,000*l.* in 1869-70. The estimate of the Board's expenditure was 432,546*l.*; the surplus in hand from the previous year reduced the amount required from the parishes to 399,306*l.*, or 5·12d. in the pound.

The resources of the Board for the maintenance of the fire brigade are 10,000*l.* from Government; 14,896*l.* from the fire insurance companies; 68,988*l.* from a halfpenny rate over the metropolis; and the chimney fire penalties, 1,139*l.*, from 2,590 such fires in the year. The fire brigade has been doubled in power since 1866, and now consists of 377 men. Its plant embraces three floating steam-engines, 25 land steam-engines, and 56 hand-worked machines. The stations are being increased in number in suitable localities, and three stations, not considered well situated, or for other cause, are to be discontinued. The brigade attended 1,825 fires, not including chimney fires, or an increase of 240 upon the preceding year.

The Board refers to, but leaves open, the important questions of metropolitan government, water supply, and sewage utilisation.

THE EDUCATION BOARD.

We are glad to hear that Mr. W. Hepworth Dixon is a candidate in the Marylebone division for a seat in the School Board for London, and that his committee have reason to be satisfied with the result of their inquiries. We shall be very glad to hear of his success. Mr. G. W. Hastings, of the Social Science Association, is a candidate in the City division, and would prove a valuable member. The election, which rests with the ratepayers, will probably take place at the end of November. The metropolis is divided into ten parts, which will return in the whole forty-nine members. The office is honorary; the chairman, who will be elected by the Board, will be salaried. The duties of the Board will be very heavy for a time, and will demand the continuous attention of the members. The Society of Arts, through their secretary, Mr. P. Le Neve Foster, have issued an address to the electors of the metropolitan boroughs, earnestly recommending them to apply to well-known friends of education to allow themselves to be elected, and thus set to the United Kingdom an example worthy of imitation.

THE AURORA BOREALIS.

An esteemed correspondent writes: — On Monday evening, about eight o'clock, a servant came in to tell me of a beautiful red light there was, like a fire. Going out, I saw the most splendid aurora borealis I have ever witnessed. It extended all over the heavens, excepting south. The effect was grand! I thought of the Prussians and burning villages; but here the red light stretched all over-head as well. The richest and brightest colour was in the east, and there Jupiter shone out, large, bright, and clear from the midst of the ruddy mass. Occasionally, bright yellow-white beams darted up through the red; and then again they swayed and swept away, as if blown by the wind, which was very strong and very cold at the time. Once the yellow-white beams took the form of a gigantic figure, with bare arms and hands, which were extended upwards as in prayer. The bend of the elbow of each arm was well defined and quite clear of the figure, and it remained thus for many seconds,—perhaps, even, some minutes. Then over it, as it faded away, shot up an arch of pale red light, extending right across from west to east, passing over Delphinum's diamond of stars, and across Cassiopea down to the Pleiades. The light for some time from the mass in the east was so bright that it shone quite red on the house, just as that of a fire would do.

It is a most singular thing, this aurora; the light might be thought to be some palpable substance, for the wind certainly affects it, moving on and bending the rays and beams; yet it is impalpable, for the stars (and notably the planet Jupiter on this occasion) shone brightly through it,—just as Arcturus did through the comet's tail,—nowise obscured, but, if anything, magnified. This is the second time this year I have seen the aurora; on the former occasion the light was white and also yellow. It has been seen at other times besides, by the people around; and all say they never remember it to have been so frequent nor so much at a time. I can easily imagine that persons who believe in the material destruction of the earth may well accept this grand demonstration as one of the signs.

"When ye shall hear of wars and rumours of wars, and see signs in the clouds, and men's hearts failing them for fear, then lift up your heads and be of good cheer, for your redemption draweth nigh." I quote from memory, but that is the sense. The wars and rumours of wars we have in plenty, and here are the signs.

FRANCE.

Sir,—I have been reading the letter of the Empress Eugénie, written from the Nile to her "*bien cher Louis.*" It bears date October 27, 1869: a year ago only, and what a change! The perusal has so strongly impressed me with tender sympathy for the writer, that I would fain have *all* our English papers say some soothing words that might chance to meet her eye—ay, and that of the poor lone imprisoned Emperor too—much as he is to blame for the miseries of his own people and the sufferings of their enemies,—and console them with the knowledge that *foreigners* can feel for them in their low estate, though *Frenchmen* have only bitter words and mean insults to give to those whose very shoes they would willingly, three months ago, have bowed down to kiss. Poor Empress! she may well say, "*Quand on voit les autres peuples, on juge et apprécie bien plus l'injustice du nôtre.*"

I think the letter is a beautiful one,—such as any Sovereign-consort might well be proud to have written, breathing wifely and motherly tenderness, as well as care for the dignity of her Emperor-husband. When she says,—"*Amuse-toi, je crois indispensable la distraction; il faut se refaire un moral comme on se refait une constitution affaiblie,*" one ought to bear in mind that she had left the Emperor behind very weak and out of health.

The French editor was too busy pointing out the little slips in spelling to appreciate the tenderness and anxious love that pervade the letter; but what are a few clerical errors (in one, too, not French) as compared with sense and sensibility? I would a thousand times rather have possessed the gentle mind that composed the letter and all its little faults, than the hard un-Christian maliciousness that pointed them out with an insulting "*sic.*" *Sick*, indeed, it makes one, of men and things, to find such harshness and want of mercy rife in the world. The same poor-spirited creatures who now pour out insults and abuse would be the first to throw their caps in the air for "l'Empereur" were he to return to the Tuileries in state. In the fable they may read that only the jackass kicked the wounded lion.

An Englishwoman.

ROME.

With a view to the ultimate adoption of Rome as the capital and the seat of Government in Italy, the Neapolitan architect, Signor Cipolla, has gone to Rome to examine and report on the various buildings which could best be occupied as ministerial offices. An engineer, Signor Giordano, has also been commissioned by the Ministry to make observations and surveys for the improvement of the Campagna, in a sanitary and industrial point of view. It has been stated that Rome will want good streets, public conveyances, gas and water works, &c. Whatever may be the need of new streets and public conveyances, no one who has any knowledge of Rome during the last ten years can say that there is any want of either gas or water. In 1848 the concession for the gasworks was obtained by the late Mr. James Shepherd, a gentleman well known and much lamented in Rome. After many difficulties he succeeded in establishing the works. The company (of which he was the gerant to the day of his death), has paid 31 dividends averaging 9 per cent. per annum. The gas is superior to that which we burn in London. An extended concession was obtained last year, and a large additional number of public lights will be in use this winter. As to water, in 1865 Mr. Shepherd—in conjunction with another English gentleman, Mr. Fawcett—after much opposition from vested interests and others, and after having deposited a large security in the hands of the Papal Government, obtained the exclusive right to convey to Rome the waters of the far-famed "Acqua Marcia," the "Regina Aquarum" of ancient Rome. The company which these gentlemen formed to carry out the works, and which has since become a *société anonyme*, under the name "Société Acqua Pia," has had also many difficulties to contend with, arising from the collapse of commercial credit, and the obstacles continually placed in the way by the officials of the late government. In August this year, however, at a cost of 160,000*l.*, the Acqua Marcia was successfully brought to the city of Rome. This undertaking will be of the utmost benefit to the newly-emancipated city, particularly in a sanitary point of view.

ROME, OCTOBER, 1870.

Old Rome, rejoice! No more thy children sleep
In cramping fetters which they hate and fear!
No more the autumn winds that idly sweep
Across thy lone campagna, wild and drear,
Shall wake in vain the silent memory
Of days when freedom was thy envied lot;
When but to read thy ancient history,
Stirr'd e'en the hearts and eyes that knew thee not.
Now shall the column from its ruin rise!
Now, too, along thy streets again be heard
The freeman's voice—be seen the glance of eyes
That never more will droop at foreign word;
But sway'd by him, their patriot King, this time
Shall rise to fame of purer deeds sublime.

M. Y. F.

LIVERPOOL ARCHITECTURAL SOCIETY.

The second meeting of this society was held on the 19th inst., Mr. H. H. Vale in the chair. Prizes for sketches done during the recess were delivered to Mr. A. J. Wells and Mr. Bleyard, both pupils of Mr. W. H. Weightman. Mr. Boult exhibited some photographs of Runic remains found in restoring West Kirby Church, in Cheshire (about six miles from Birkenhead); and Mr. Vale exhibited a photograph of a church erecting from his designs in Liverpool, in which a somewhat new treatment of the spire had been attempted, by planning it as an octagon with unequal sides, the angle faces being small in comparison with the others, more resembling a large chamfer off the angle. It was thought this treatment might lend some novelty of expression to the spire, and afford the opportunity for a varied treatment. Mr. T. D. Barry then read a paper on "The Present Condition of the Sewage Question," especially in reference to what had been brought forward on the subject during the recent meeting of the British Association. The paper consisted mainly of a recapitulation of what had been urged in regard to various systems of sewage utilisation, especially as to the respective merits of irrigation and filtration systems, the lecturer being from his own experience in favour of the latter. A considerable discussion took place on the points mentioned in the paper.

BLACKPOOL PIER.

Blackpool Pier was built in the years 1862-3. In 1869 it was determined by the inhabitants of Blackpool to build a sea-wall and promenade the whole length of the town, and the Pier Company took this opportunity of remodelling the entrance to the pier, the designs for which were made by Mr. E. Birch, of London. The castings were executed and the contract was carried out by Messrs. Laidlaw & Sons, of Glasgow, under the superintendence of Mr. A. E. Oakes, resident engineer. The new entrance is 140 ft. in width, and has an easy gradient of 150 ft. downwards from the promenade. The design of the gates and toll-houses is original, and was made by Mr. Birch. The two toll-houses are of octagonal shape. There are four turnstiles, two gates about 6 ft. wide, adjoining the toll-houses, and a pair of gates in the centre, about 15 ft. wide. There are four gas brackets, with three lamps to each, and six flag-staffs, supported on octagonal

pillars. The colour is green bronze, picked out in gold.

The pier is almost entirely constructed of iron. Upon the main portion are erected several ornamental shelter and refreshment houses of an octagonal shape, while at the head is a much larger ornamental shelter-house, which serves as an efficient sun-shade and wind-guard. It is surmounted with a flag-staff and an ornamental lamp, which, according to Trinity House regulations, is lighted up between sunset and sunrise. At the head there are also ample landing-stages, which enable passengers to land and embark at all states of the tide. Around the whole pier seats are arranged, forming comfortable accommodation for between 3,000 and 4,000 persons. The total area for promenading purposes is 38,500 ft.

SILLOTH CHURCH.

Sir,—In March, 1865, an advertisement was inserted in certain newspapers asking architects to submit designs for a church to be built at Silloth. Several architects sent in designs, and, after months of delay, that of Messrs. Andrews & Pepper, of Bradford (architects of St. James's Church, Carlisle), was adopted, they estimating the cost at 1,900*l.*, including *tower* and *spire*. In the mean time, one of the firm visited the site, and found that instead of an ordinary foundation for the superstructure, it would require one not less than 8 ft. in depth. In consequence of this Messrs. Andrews & Pepper wished their estimate to be increased to the sum of 2,000*l.* The working drawings were all prepared, also plans to be submitted to the Diocesan Society, and necessary forms filled up. However, in August, 1866, the Silloth Church Committee rejected the design of Messrs. Andrews & Pepper, and adopted that of Mr. C. Ferguson (who was second in the competition), which design has now been partially executed *without a tower and spire*, at the enormous cost for such a structure of 3,400*l.* In addition to this amount there will yet be required a large sum to build the tower and spire and boundary walls. To what extent the church committee are liable, whether it be to Messrs. Andrews & Pepper, or the whole of the architects who submitted designs, or the yet unpaid contractors, are points yet to be decided.

Carlisle.

WORKMEN'S CLUB AND INSTITUTE UNION.

An earnest appeal is being made for increased support to enable the council to carry on the work of the society. The work done last year included the increase in the number of institutions from 355 to 404; the estimated number of members being 68,500. Sixty-eight institutions joined the society—a greater number than in any previous year—making the total number of affiliated clubs 200.

Amongst the works which it is particularly desired to accomplish are the increase of the circulating library to an extent commensurate with the constantly-increasing demand upon its resources; the formation at all clubs of labour registers, with a view to enable workmen (whether members of trade societies or otherwise) to have a more accurate knowledge of the state of the labour market in all towns throughout the kingdom; and the extension of the organisation by which instructive recreation has been provided for Saturday afternoons by visits, under the direction of persons distinguished for their attainments in art and science, to public museums and galleries, to public works and buildings, and to the country for the purpose of studying botany, geology, and other branches of natural science. Some of our readers will, we hope, assist.

THE PROJECTED EASTERN GANGES CANAL.

This canal will take its supply of water from the east side of the River Ganges, at a point seven miles below Hurdwar, or the headworks of the present Ganges Canal, and will water 3,000 square miles of Western Rohilkund. The total length of the main lines will be 260 miles, and that of the minor channels and distributing branches nearly 900 miles.

For seven months in the year, or during the Khurreef season, the canal will carry a maximum supply of 4,500 cubic feet per second, and during the remainder of the year, or the Rubbee season, 1,250 cubic feet will be about the average quantity of water which will pass through the regulators at the headworks. The cost per foot of water delivered by this canal, calculated on the average discharge, will be 3,150 rupees. The total amount of the estimate for the whole work completed is a little over 850,000*l.*

The project was prepared, under the superintendence of Mr. J. Parker, C.E., Superintending Engineer 3rd Circle Irrigation Works, by Mr. J. P. Roberts, C.E., Executive Engineer, and his staff of assistants, including Mr. W. C. Hosking, C.E.

Colonel Greathed, the Chief Engineer, in his official report on the project, eulogises the laborious research and professional skill which the Superintending and Executive Engineers have devoted to the subject.

THE HAMPSTEAD HEATH PURCHASE.

At the usual meeting of the Metropolitan Board of Works, Mr. Le Breton in the chair, a report was presented from the Works and General Purposes Committee as to the terms proposed for the purchase of Hampstead Heath to be retained in perpetuity as a place of recreation. The report, after detailing proceedings, stated as the general result, that Sir John Maryon Wilson, and all others concerned, were to co-operate with the Board in obtaining the necessary Parliamentary powers, the whole of the lord's interest being conveyed to the Board for public purposes for a sum of 45,000*l.*, and no portion of the heath was to be let for building purposes. The Board was also to pay 2,000*l.* in satisfaction of legal and surveyor's charges, and Parliamentary and other expenses. The claims of the copyholders for any rights they might possess in the heath, should those rights be interfered with (but the amount necessary for the purpose could not at present be ascertained), would, it was believed, be comparatively small. In the event of the recommendation of the committee being approved, the Board would have secured for the comparatively small sum of 47,000*l.* the whole of the lord's interest in a space of ground the value of which, as a means of recreation and amusement, could hardly be over-estimated. The committee recommended that the matter be referred back to them to take such steps as might be required for carrying out the proposed arrangements. The report was unanimously agreed to.

THIS SATURDAY.

A Loan Exhibition of Paintings in Water Colours will be opened for private view this Saturday (29th instant) at the Institute of Painters in Water Colours, Pall Mall, preparatory to public exhibition on Monday. It includes some excellent specimens by G. Bach, Barrett, Bennett, Burton, Callow, G. Cattermole, D. Cox, D. Cox, jun., Dewint, Duncan, J. Fahey, Copley Fielding, Birkett Foster, A. Fripp, G. Fripp, Goodall, Carl Haag, Hine, Holland, W. Hunt, Jackson, Sir Edwin Landseer, R.A., J. F. Lewis, R.A., Mulready, R.A., Palmer, David Roberts, Rosetti, Collingwood Smith, F. Tayler, F. W. Topham, J. M. W. Turner, R.A., J. D. Watson, and others. The proceeds will be devoted to the National Hospital for Consumption and Diseases of the Chest, on the separate, or cottage, principle, erected near Ventnor, Undercliff, Isle of Wight. ——On the same day will take place the private view of the Winter Exhibition of Pictures by foreign and British artists at the French Gallery, Pall-mall; and of an Exhibition of Cabinet Pictures in oil, in the Dudley Gallery, Egyptian Hall.——The Associated Art Institute will hold their first *conversazione* in the evening at the House in Conduit-street.——On the preceding evening, Friday, the opening *Conversazione* of the Architectural Association was to be held at the same place.

CONCRETE AND IRON BRIDGE.

Sir Shafto Adair invited several gentlemen to witness the testing of a new bridge erected for him, from the designs of Mr. H. M. Eyton, of Ipswich, over the Waveney, at Homersfield. In designing the bridge advantage was taken of the principle of Messrs. Phillips's patent fireproof construction, a system in which all the ironwork is completely embedded in Portland cement concrete. The bridge has one arch of a clear span of 50 ft., with a rise of 5 ft. 3 in. The skeleton of the bridge is of iron, and this is entirely filled in with Portland cement concrete, and rendered with Portland cement, thus forming one continuous beam, getting stronger every year, in addition to the iron skeleton, which is of itself sufficient to do the ordinary statical work of the bridge: the weight of concrete alone is over 100 tons. The spandrels of the bridge are relieved by a raised panel, and in the centre is a casting of the Adair arms, taken from the old three-arched brick bridge. The parapets have an open iron railing in panels, with the monogram "A. S. A." in the centre. The first test applied was that of a five-ton road-roller drawn by four horses. This was passed across several times, and not the least deflection was perceptible. Afterwards a heavy wagon, laden with sacks of flour, weighing altogether six tons, was passed over, and still no deflection could be noticed. Messrs. T. & W. Phillips, of London, who have carried out the work at the bridge, are the patentees of a well-known system of fireproof floors.

ABOUT THE MAIN DRAINAGE OF DUBLIN.

Sir,—The letter of Mr. G. W. Hemans, C.E., published in your last issue, is almost confirmatory of all the *Builder* advanced the week before and on many previous occasions. He, however, takes exception to what was said of returning sewage to the river, in case the outfall was not carried out a proper length into the sea. Men will differ on this point, and may agree to differ. I know the city of Dublin, its river, harbour, and bay, well and sufficiently long, and every inch almost of its sea-beaches and surroundings is as familiar to me as the spot wherein I was born. With this local knowledge and some experience with the subject at issue, I have no hesitation in saying, that if the sewage of the Liffey were dispersed as is, or was, contemplated, the evil you alluded to would occur, and the new sewerage scheme would in that instance be a most imperfect and mischievous one. The Clontarf Sandbank, or North Bull, as it is called, presents, as you remark, and Mr. Hemans admits, an admirable means for utilising the valuable sewage of the Liffey.

The present Bill of the Dublin Corporation will be the child of many fathers. No amateur production has ever been submitted to such a process of docking, curtailment, erasure, or interpolation before as this woefully-mangled "new sewerage scheme." It is, indeed, a hybrid creation, containing much that is valuable in its constitution, and much more that is bad, crude, and undeveloped. No doubt, there will be yet many emendations and alterations before the baptised bantling is ready for public exhibition. The parallel sewer part of the scheme, along the line of the river, on each side, is certainly good, and the only obvious and practical remedy. Which of the two engineers will claim this proposal as his I do not know; but this I do know, that the *Builder* has as good a right, if not a better, to take credit for a portion of the present scheme as any one of the various claimants for the honour. The reclamation of the waste sands of Clontarf and its neighbourhood was suggested long since in your pages, with other ways and means now suggested and partly adopted.

Taking up an old volume, a few days since, entitled, "Observations on Mr. Archer's Statistical Survey of the County of Dublin," published in 1802, I find the present idea of a parallel system of main drainage for Dublin is put forward, among other things, by the author, Mr. Dutton Cook. His suggestions are good, and that one of letting the water of the river into the parallel sewers is still worthy of consideration.

Dublin is supplied with every natural facility for carrying out a perfect and a profitable scheme of main drainage, and it hardly needs the eye of an engineer to see the stark-naked facts that would be sufficient to shame a conclave of idiots into action, instead of a city corporation.

You see, sir, it has taken "dear dirty Dublin" upwards of fifty years to think over one healthy movement towards preserving human life. Next it has taken her talkative corporation seven years to frame a measure of partial relief; and goodness knows how many years, and how many millions it will yet take before the patchwork pattern of other men's minds will be finished. I am a comparatively young man, but I fear much, if the progress in the future is like the advance of sanitary improvements in the past, that I am very likely

to comb a grey head before the Liffey is properly purified, and its sewage profitably distributed.

H. C.

P.S. I would propose that before the Corporation Bill is finally amended for Parliamentary action, a clause be introduced for giving the city power for obtaining, by leave or purchase, the waste sandbanks of Clontarf. Any opposition that could be advanced by the lord of the manor, or neighbouring proprietors, could not possess one grain of common sense or reason in support of it.

It would not only be stupid, but criminal on the part of the Corporation to neglect availing themselves of the opportunity to reclaim and utilise those waste sands, by an easy and fortunate sewage-irrigation scheme, and also a most practical and profitable one.

I anticipate the concurrence of the *Builder* in these views.

ROCHESTER NEW CORN EXCHANGE AND THE CASTLE GARDENS.

The ceremonies of laying the foundation-stone of the Rochester New Corn Exchange, and opening the Castle Gardens, took place on Thursday, in last week. The architects of the new exchange are Messrs. Flockton, of Sheffield. Although it was termed the "foundation," it was really the corner-stone of the building which was laid by the Mayor, the structure having so far progressed as to enable the large party which assembled to meet on the first floor, which will form the new exchange. It is erected at right angles to the present building in the High-street, and can be used in conjunction with it, if desirable. The amount of the expenditure is not to exceed 5,000*l*. The new building is approached from the present Corn Exchange by a double flight of stairs. It is 91 ft. in length, 46 ft. wide, and 40 ft. high. At the west end there is a retiring-room, 18 ft. by 15 ft. On the ground-floor there is a room suitable for a library or museum. It is 44 ft. in length, 35 ft. in width, and 12 ft. high, and adjoining this room is one convertible into a kitchen. There are also other accommodations. the present owner of the castle and its grounds, which were taken possession of on the same occasion, is the Earl of Jersey, and his lordship has granted a lease of 80 years to the Corporation, and appointed the Mayor of Rochester for the time being Constable of the Castle, and for the first time for many hundreds of years a standard was flying on Thursday from Gundulph's tower. A large number of persons made their way to nearly the top of the ruins. Surrounding the castle, which, with its tower and embattlements, is upwards of 100 ft. in height, and has walls from 11 ft. to 13 ft. in thickness, are the extensive gardens.

THE WATERWORKS AT KIDDERMINSTER.

These works have been initiated in the ceremonial turning of the first sod of the new reservoir. Four years ago the defective state of the drainage was forced on the attention of the council, and a sanitary committee was appointed; and on 10th October, 1866, they passed a resolution requesting Mr. Fairbank, C.E., and Messrs. Gotto and Besley to inspect the town, and report on the best mode of improving the drainage and dealing with the sewage. The reports pointed out the necessity there was for waterworks as well as new sewerage. The proper cleansing of the sewers by a constant flow of water through them was indispensable; and, as the state of the wells from which the supply of water for domestic purposes was obtained came to be known, the necessity for waterworks was still more apparent. The question, however, was shelved for the time. At length the outbreak of fever in the town, which occurred about two years ago, again called public attention to the sanitary defects of Kidderminster. The guardians laid the state of the case before the Home Secretary. A Government inspector came down, and, in consequence of his report, the Home Secretary issued a compulsory order for the works to be proceeded with immediately; and, in accordance with the plans of Mr. Fairbank, whose scheme had some time ago been adopted by the local authorities, and who had prepared detailed plans for the works, the corporation have been making various arrangements for the acquisition of lands, &c., and otherwise preparing for the commencement of the works. Borings for the water for the supply of the town have been made on Sutton Farm, which is in the occupation of Mr. Boraston, and a plentiful and excellent spring of water has been met with. The contract for the reservoir has recently been made, the tender of Mr. Hilton, of Birmingham, being accepted, and the formal commencement of the work has now been made. The members of the corporation, with the borough surveyor and architect, Mr. C. J. Fairbanks, C.E., and the clerk of the works (Mr. Vales) and other officials, and about 200 of the general public, were present at the sod-cutting.

CITY OF LONDON UNION NEW OFFICES.

The guardians have invited designs in competition from the following architects:—Mr. F. Chambers, Mr. H. Dawson, Mr. T. C. Clarke, Mr. Thomas Blashill, Mr. J. E. Saunders, and Mr. W. Hudson.

THE WORKMEN'S INTERNATIONAL EXHIBITION.

Although this Exhibition is still open, and will remain open for some time, a meeting of its promoters and supporters has been held in the Agricultural Hall, Islington, when the Lord Mayor and Sheriffs attended to make the announcement of the prize awards. Unfortunately, these were so numerous that it was impossible to declare them all; and as it would have been invidious to mention some and omit others, a discreet silence was observed as to the result of the labours of the jurors. Several speeches were made, and some suggestions were offered as to the benefits which might, under proper management, be derived from this and similar exhibitions.

ANNUAL INTERNATIONAL EXHIBITIONS.

The Exhibition buildings, South Kensington, are making rapid progress towards completion. The painters and decorators have finished their work in the fine-arts gallery, and Messrs. Minton, Taylor, & Co. have commenced laying the encaustic tiling on the floors. The walls of the galleries are painted in distemper, a pale green, relieved by a broad band of chocolate under the cornice and by skirting, which is also chocolate. The ceiling is ordinary distemper. In the lower part of the building, which has just been taken possession of by the painters, the same colours will be employed, and, with some exceptions, the same style of decoration will be employed. A dado, 5 ft. high, of chocolate colour, will run round the entire court, and the girders which support the fine-art galleries above will be panelled in the same colours. The colour of the tiles for the flooring is dark red. The French supplementary gallery, or annexe, forms three sides of a square, and has direct communication with the exhibition buildings. The court-yard, or interior of the square, is to be laid out as a garden, and used for refreshment purposes. It is proposed to open up to the view of persons in this court-yard the gardens of the Horticultural Society.

NEW SYNAGOGUE IN BRISTOL.

The first stone of a new synagogue has been laid in Park-row, Bristol, in lieu of one taken by the Corporation for the new street to the Terminus. That building was sold for about 4,000*l*., and the new building, with the purchase of site, together with the internal fittings, will cost rather more than this sum. Mr. Fripp and Mr. Collins are the architects. The front portion of the site will be occupied by the house of the reader, and the vestibule of the synagogue in the rear of this house will be approached from the street by a flight of steps leading to the vestibule, where there will be an arch of Bath stone. The walls, with the exception of this portion, will be of dressed Pennant stone. The building itself will be 46 ft. by 62 ft., and will have a ladies' gallery round three of its sides, there being a second approach to this by a flight of steps from the vestibule. The ceiling will be filled in with ornamental panels. The builders are Messrs. Beaven & Sons, and Mr. R. M. Bryant, of Old Market, has undertaken the woodwork of the interior. The building will accommodate between 400 and 500 persons.

THE PROPOSED MORTUARY BUILDINGS, CITY OF LONDON.

At a meeting of the City Commissioners of Sewers, Mr. Hora brought up a report from the Sanitary Committee submitting amended plans for the mortuary proposed to be erected in Golden-lane, according to which the buildings were estimated by the surveyor to cost 7,821*l*., making, with the 5,000*l*. paid for the land, a sum of 12,821*l*.

Mr. Haywood said that, in addition to the estimate, steam pipes and hot-air flues would be required, but he did not think there would be anything to increase the cost more than 500*l*. or 600*l*. at the outside, so far as his department was concerned. A good deal of discussion took place on the subject, and eventually the report was adopted.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A special general meeting of members is to be held on Monday evening, the 31st of October, in compliance with the following requisition addressed to the council, and duly signed:—

"We, the undersigned Fellows of the Royal Institute of British Architects, in view of the recent decision of the Law Officers of the Crown with reference to the ownership of the drawings of the Houses of Parliament, and of the code of conditions sought to be imposed by the Office of Works upon architects employed on Government business, request you to call a general meeting of members of the Institute to discuss these subjects, at the earliest possible opportunity."

The first ordinary general meeting of the session will be held on the 7th of November, when the president, Mr. T. H. Wyatt, will deliver an opening address.

The following papers have been promised and will be read:—"Observations upon the West Front of Wells Cathedral," by Mr. Benjamin Ferrey; "Considerations on the Selection of Building Sites," by Professor D. T. Ansted; "On the Construction of Theatres," by Mr. E. Salomans.

RAILWAY MATTERS.

Proposed New Station at York.—Among the eight deferred works of the North Eastern Company, representing a capital of 761,635*l*., was one for a projected new station, outside the city walls of York, for which the estimate is 196,635*l*. The time has come when it is thought this work must, from the increasing traffic, be carried out. The removal of twenty miles of sidings to a point more distant, in order to make way for the new station, is a work of magnitude, and the company have now in hand the formation of the necessary embankments about a mile to the north of the York junctions, and into the Ouse valley at that point they are emptying about 600 truck-loads of ballast per day. On the formation of the new station all "backing-in," as is now done with every train, will be avoided. The whole of the South, Midland, and Scarborough lines will run through the station, and the North Eastern main line from the north will have to be diverted to run in upon the Scarborough branch.

A Small-gauge Railway.—The proposed railway for Glencairn will be unlike other railways. The gauge will be only 2 ft. 6 in., which will of course prevent the rolling-stock from travelling on neighbouring lines, and the drivers will be furnished with check-hooks, and have power to stop the train to take up passengers between the stations. It ought to be called a tramway. The cost of the line would only average a little over 3,000*l*. per mile. The scheme, however, is to be "further considered."

THE POTTERY OF DERBYSHIRE.*

Amongst the manufactured productions of the county of Derby, specimens of fictile ware have always held a very distinguished place, a circumstance which is chiefly due in modern times to the many beautiful objects of ceramic art which were turned out from the Old China Factory, upon the Nottingham-road, in Derby. Long before the establishment of these celebrated works, the manufacture of pottery in various forms was one of the chief resources of trade in Derbyshire, and it is very probable that

* From "The Pottery and Porcelain of Derbyshire." By Alfred Wallis, Editor of the *Derby Mercury*, &c.; and Wm. Bemrose, Jun., Author of "A Manual on Wood Carving," &c.; for the Guidance of Visitors to the Midland Fine Arts and Industrial Exhibition, held in Derby, 1870. London: Bemrose, Paternoster-row.

kilns were erected for this purpose very soon after (if not prior to) the Norman conquest. Tile works upon an extensive scale were recently discovered at Repton, from whence the pavements of many English ecclesiastical buildings of the fourteenth century were furnished. Specimens from this manufactory were exhumed at the Friary, in Derby, when the grounds were dismembered about 1863.

In 1862, a discovery was made upon the estate of Lord Scarsdale, near the top of Burley Hill, in the parish of Duffield, the importance of which cannot be over-rated. Here, in the course of drainage, the workmen uncovered a number of broken earthen vessels, burnt stones and ashes, forming the *débris* of what had once been considerable Norman pot-works, specimens of which are preserved at Kedleston Hall. One of these is a very fine jug or pitcher, 16 in. high, perhaps the most interesting Mediæval specimen of fictile ware that has yet been discovered in the county. It bears the family badge of the Ferrars (who held Duffield Castle from the Conquest to the reign of Henry III.),—namely, the horseshoe and buckle, with other ornamentation.

Even earlier than the foregoing (if tradition and recent discoveries may be credited) were the pot-works at Tickenhall, near Melbourne, where the extensive manufacture of rough pottery is carried on at the present time. There is good reason for believing that a large proportion of the Mediæval vessels, which, under the names of costrils, tygs, cruises, pipkins, &c., are occasionally discovered in the Midland district, were made at Tickenhall, where, upon the site of an ancient factory, "wasters," or imperfectly finished pieces, of Norman character, are frequently exhumed.

Paylipp Kinder, in his manuscript, "Historie of Darbyshire," writing of Tickenhall, says:—

"Numa Pompilius here might have learn't his 'Straine of Frugalities!' Here are your best Fictilias made you; earthern vessels, potts, and pancions, at Tycknall, and carried all East England through."

It is, perhaps, needless to go back to prehistoric times in contemplation of the funereal vases, in which our British forefathers enshrined the ashes of their dead, or we might enlarge upon the graceful shapes, elegant ornamentation, and general adaptability of purposes, which characterise the fictile urns of the British, Roman, and Saxon periods in Derbyshire. Much has been written upon this subject, which may be referred to by the curious in such matters.

The Derby China Manufactory.

Taking up the history of Derby China from Heath's Cockpit Hill Pot Works, the name of William Duesbury, in conjunction with the China Factory upon the Nottingham-road, follows that of the Heaths in natural order, although it is by no means certain that this is the proper chronological sequence. Of the early history of the famous manufactory at Derby little is known; even the old hands seem to have had but very obscure ideas respecting its origin, and the most authentic information is contained in the MS. "notes" of Samuel Keys, which we here print, without alteration, from a copy differing somewhat from that published by Mr. Chaffers:—

"*Notes by Samuel Keys.*—The History and Origin of the Derby China Manufactory being very little known, I shall endeavour to give a few of my own recollections.

China was first made in Derby, I believe, by a man in a very humble way (but his name I cannot recollect). He resided in Lodge-lane, in some old premises up a yard by the (now Brown Bear public-house). When he first began, he fired his articles in a small pipe kiln very near, till he had constructed a small kiln in a fireplace in the old premises he lived in. He had only small animals and birds, laying down lambs, &c.

Mr. William Duesbury the first got his knowledge firstly from that man, and improved on it. I never knew much of Mr. Duesbury's origin, but believe he came from Walsall, or the neighbourhood.

Mr. Duesbury was on friendly terms with Mr. Heath, the banker, and the proprietor of Pot Works on Cockpit-hill, and which I well remember.

Mr. Duesbury had improved in his small experience with small China Toy making, and Mr. Heath assisted him in the most liberal and friendly manner, with money and other means to carry on, which he did with credit to himself and benefit to others.

Mr. Heath became a bankrupt, the Pot Works were broke up, and Mr. Duesbury was a debtor to a considerable amount. Mr. Duesbury had a stock of goods by him, and if I recollect right, was intrusted with a large cargo of ware from the Pot Works, as they were called. He undertook what at that time was considered a serious undertaking,—a journey and voyage to Ireland on speculation with the goods. The result was favourable. He parted with all his goods to great advantage, returned and paid all with satisfaction to the bankrupt, and opened a connection which enabled him to go on with spirit, and as a respectable manufacturer.

Mr. Duesbury was a very old man when I first went, and the manufactory had been established several years. Several painters having served their apprenticeships, and were working as journeymen. I will try to recollect their names—Thomas Soar and Joseph Stables, the only men who used gold, and that genuine brown gold, William Cooper, William Yates, John Yates, Edward Withers, William Billingsley, Joseph Dutton, John Blood, William Smith, William Longden, William Taylor, then a biscuit blue painter, John Butler, colour grinder, and three women burnishers, all in the two old painting rooms in the old works. John Duesbury, overlooker.

T. Soar did the principal part of the useful and rich gilding and painting. J. Stables was chiefly employed in gilding figures and slight tea ware. The others were employed at figures, and slight flowers on tea ware. Painters ere then alarmed at a useful kiln of ware being drawn, being mostly employed in the ornamental branch. I was the last that was bound apprentice to the first William Duesbury. In a short time after he was affected with a stroke, which deprived him of his speech, and use of his limbs. He lived several months in that state.

The China Manufactory at Chelsea had failed while Mr. Duesbury was going on in a very prosperous way, and he established his manufactory in the most respectable style with models, moulds, &c., from there, and numbers of them are now in use (or might be) to good advantage. He had likewise opened a warehouse in Henrietta Street, Covent Garden.

In a few years after I went, the figure trade was on the decline, and was thought owing to Mr. Duesbury introducing Mr. Brown's Spar Ornaments in his show rooms.

Very soon after his death, flower painting was at a very low ebb. Withers was then looked upon as the best flower painter on China in England. But they could not find employ for him, and drove him for refuge to Staffordshire, by giving him a quantity of basket boys, or 'buggards' as they were then called.

Several painters and gilders were put down, and Derby was beginning to rank as the first manufactory in the kingdom. All were then put to gilding, and superior kind of painting. Zachariah Boreman, a Chelsea painter, came from London, and may justly be called the father of china painting. He excelled in landscape painting, and was on intimate terms with Mr. Wright, the celebrated artist.

When Mr. Duesbury had been here a short time, an order came for some plates, to match a Chelsea plate with a single plant in a curious style from nature. Withers was gone, no one knew where at that time, and Billingsley made the attempt with the instructions of Mr. Boreman. He copied any garden or wild flowers that suited, and when the order was sent off it gave great satisfaction. This order was followed by others, and flower-painting was raising in very high estimation. Single plants were then most fashionable, and Billingsley persevered in flower-painting under the instructions of Mr. Boreman, who first taught him the modern method of grouping, and with what success every China painter knows without any further comment from me.

Derby, about this time (1790), and a many years after, was the first for ware and workmanship in the kingdom.

I have no wish to go on with the history of the next Mr. Duesbury, he brought it to the highest pitch of excellence; and how it has been conducted, and by who, with the history of them, would be distressing to my own feelings, and unpleasant to others.

There are few, perhaps, who may now recollect part of the remarks I have here given entirely from memory on my part, and what I believe correct. My statements are very brief, and I have given it merely for information to the rising generation, and for them to make their own remarks from what they see and hear.

When I first went to work, Mr. Taylor painted only blue under the glaze on biscuit. That failed, and he asked permission to paint on the glaze, and paid his foot-ale for it. He was set to matching India patterns, and became very clever and useful.

Very few then knew how to use the wheel, and only water-colour lines were made. All circles, lines, and edges were done by hand. Painters resisted the wheel being used in any other way. Taylor had some ware to match with red lines in the pattern. He attempted to do them on the wheel, but they were rubbed out, and the head of the wheel taken out and hid. In the end he was allowed to do them by proving how much better and more true the lines were. Privately after that, some time, gold circles, &c., were done, and the rise of the wheel became more general and useful. Withers after being harassed about in the potteries very much, went to Birmingham, and was employed at the Japan trade. He then went to London, and was very much distressed among the Japan painters. Flower painters were wanted, and he was found out and sent for. But was a considerable time before he could be made useful, and was almost despairing. He at last managed pretty well, and became a respectable flower-painter again, but very inferior to Billingsley.

He died in Bridge-gate in great distress, chiefly owing to misconduct, and was buried by his shopmates.

An interesting account of the origin of the manufactory is given in the different histories of Derby.

Whoever may be at the trouble of perusing this, let them bear in mind I have no motive but giving information. It is wrote without the least study, but merely from recollection as I went on. No pains is taken in the writing, and of course I hope there may be no criticism made, but take the act and deed together, being merely a trifling respect towards the trade I class myself a humble member.

S. Keys.

21*st June*, 1837."

Mr. Chaffers, from whose important work we have had the privilege of making valuable extracts, has also an account by Mr. Locker (which has recently come into his possession), from which he gathers that William Duesbury was the son of a carrier, at Cannock, in Staffordshire. A variation from the above notes, by Keys, runs thus:—"About 1745, a man, said to be a foreigner, in very poor circumstances, living in Lodge-lane, made small articles in china, such as birds, cats, dogs, sheep, and other small ornamental toys (which he fired at a kiln in the neighbourhood, belonging to a pipe-maker named Woodward)." In a foot-note Mr. Chaffers observes,—"Mr. Jewitt thinks the foreigner was a French refugee, named Andrew Planché; having in his possession the *draft* of a deed, *which was never executed*, for partnership for ten years between Heath, Duesbury, and Planché. Probably Mr. Heath's bankruptcy, about 1750, altered all these arrangements, for Planché's name never appears again in connexion with the works." The bankruptcy of Messrs. John & Christopher Heath did not take place until 1780, or thirty years after the ascertained foundation of the Nottingham-road Works, so that deductions based upon the existence of such an informal document as that above mentioned must be received with considerable caution.

We may here give a short description of the method of working at the opening of the present century, written in 1810, the technical terms being printed in Italics.

The body of the semi-vitreous ware called porcelain, is fine white clay, combined with different proportions of fluxing material. The best kind is absolutely infusible, and takes for glaze a vitreous substance without a particle of lead. When the paste is duly prepared by grinding and other operations, it is consigned to the workman, whose dexterity produces a variety of beautiful forms from the shapeless mass delivered into his hands. Round vessels are usually made by a man called a *thrower*, who works them on a circular block moving horizontally on a vertical spindle. Afterwards they are *finished*, and *handled*, if necessary, by other persons, and are then conveyed to a stove, where they remain till the moisture is nearly evaporated, when they become fit for baking. Oval vessels, such as tureens, tea-pots, &c, assume their form through being pressed into moulds of plaster or gypsum, by hand. The *saggars*, or cases in which articles are burnt, are various in shapes and dimensions as best regards convenience. These are *set* in the *kiln* one upon another, and when piled nearly to the top have the appearance of piles of cheese. When the kiln is full it is carefully closed, and the ware *baked* by the admission of heated air through horizontal and vertical flues. This is the *first baking*, and the porcelain in this state is denominated *biscuit*. It is then *dipped* in *glaze* of about the consistence of cream, and carried to the glaze-kiln, where it is again baked, but to a less intense degree of heat than before.

The ware is now delivered to the painters, who, with colour prepared from mineral bodies, ornament it with the required patterns. After this process, it is again conveyed to the kiln, and the colours vitrified. Every coat requires a fresh *burning*: the more elaborate works have to undergo the action of fire several times before they obtain their full effect and beauty. This completes the process with those articles that have no gold in the pattern; but where this addition is wanted it is pencilled with a mixture of oil and gold, dissolved or *thrown down* by quicksilver, aided by heat (Keys says, "brown gold"), and once more committed to the kiln: here the gold comes out with a dull surface, which is rendered brilliant by *burnishing* with bloodstones and other polishing substances. The gold when not sufficiently burnt, will separate in thin flakes; and when over-fired will not receive a proper polish. The highest finished ware in this manufactory is frequently returned to the *enamel kiln* where the colours are fluxed six or seven times: the best only are finished here for sale.

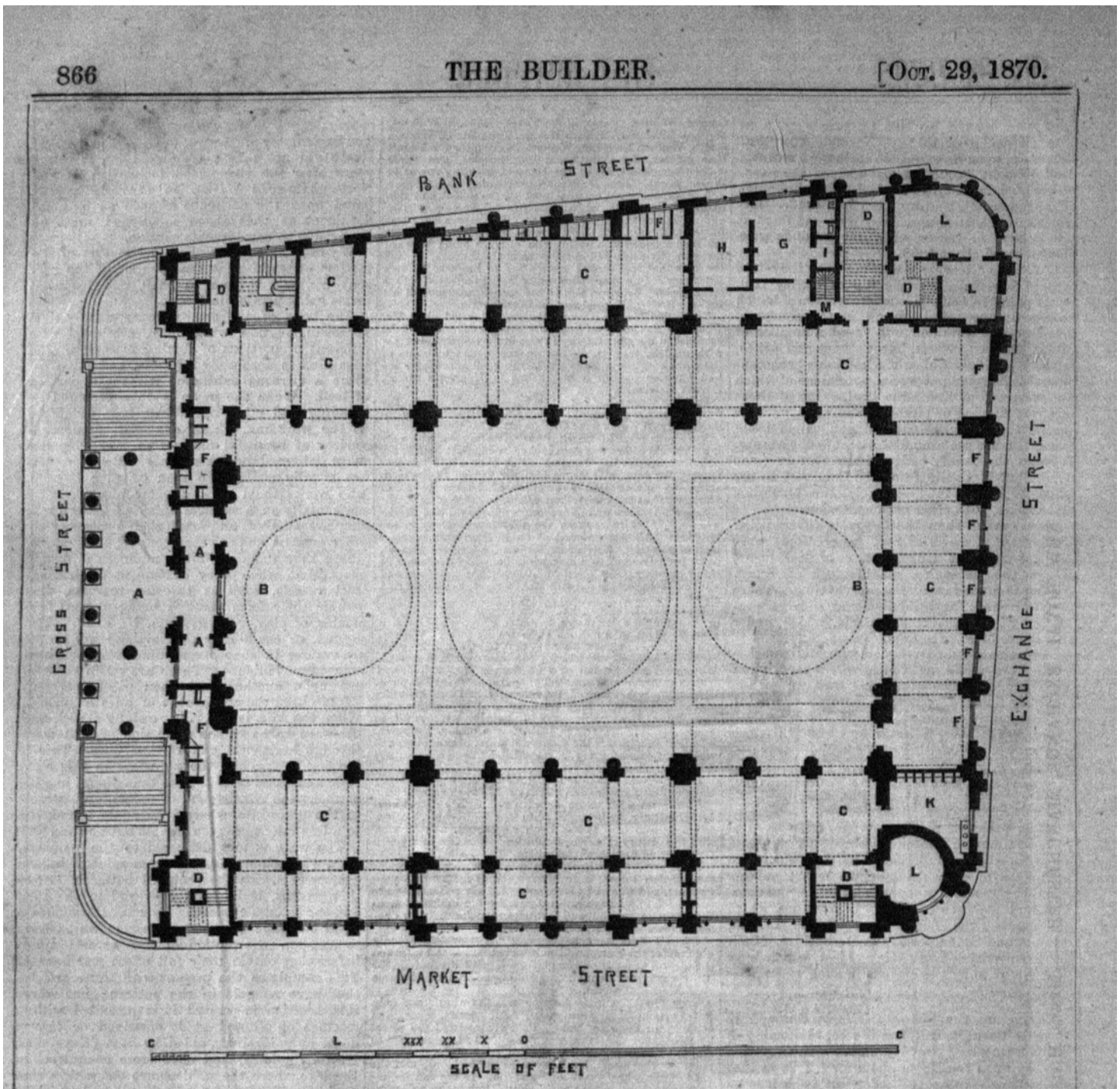
The making of *biscuit figures* is peculiar to this manufactory, and the pieces themselves are supposed to be equal in beauty and delicacy to any other of a similar kind made in Europe. The various parts of the figures, &c., are cast in separate moulds, and when dried are joined by a paste of the same kind, but thinner in consistency (*slip*). The articles, after undergoing a regular and continuous heat in the kiln, come out extremely white and delicate.

The writer of the foregoing description goes on to remark, that in 1810 the factory was five times the extent of the original building, and even then insufficient to accommodate the workmen. Alluding to the increase of business and the "national importance" of the undertaking, he describes new buildings in process of erection, the introduction of a steam-engine, and other improvements. At this time the manufactory occupied an area equal to 6,000 square yards, and had a frontage of 170 feet. It gave employment to between 300 and 400 work-people—men, women, and children.

[The factory afterwards passed into new hands, and declined, till finally it was given up entirely.]

Mr. Locker established a factory in King-street, the plant of which is now worked by Mr. Sampson Hancock, opposite to the Derby Grammar School. Mr. Hancock's specimens are in every way creditable to the town and to himself.

G



NEW ROYAL EXCHANGE, MANCHESTER.
Plan.

The Artists.

Artists generally are a race of people dwelling in a world of their own, which is but little understood by those outside of the pale; and the clever people employed at the old Derby factory, whose facile fingers have produced those masterpieces of decoration which are gazed upon with such pleasure by all who examine the splendid groups collected together in the Derby Exhibition of 1870, formed no exception to this rule. Nomadic in their habits, they seem to have wandered about from factory to factory, earning high salaries, and spending money freely—mostly improvident, and seldom satisfied. Some of the more staid and elderly amongst them settled down in the town, and became reputable men as teachers of their art; but almost all of them shared the usual artist-fate, and died poor. Many of them were sons of respectable tradesmen and yeomen in the vicinity of Derby, such as Thomas Soar, the noted gilder and designer of arabesques, who was one of the Soars of Little Chester (a yeoman family of great antiquity, now extinct in the male line); and the Yateses, who were connected by consanguinity with several good families of this town. Brewer, Bancroft, Stanesby, Mellor, Whittaker, and others, were also Derby men of good standing. The modellers were mostly birds of passage, and many of them foreigners.

Wirksworth China and Earthenware Works.

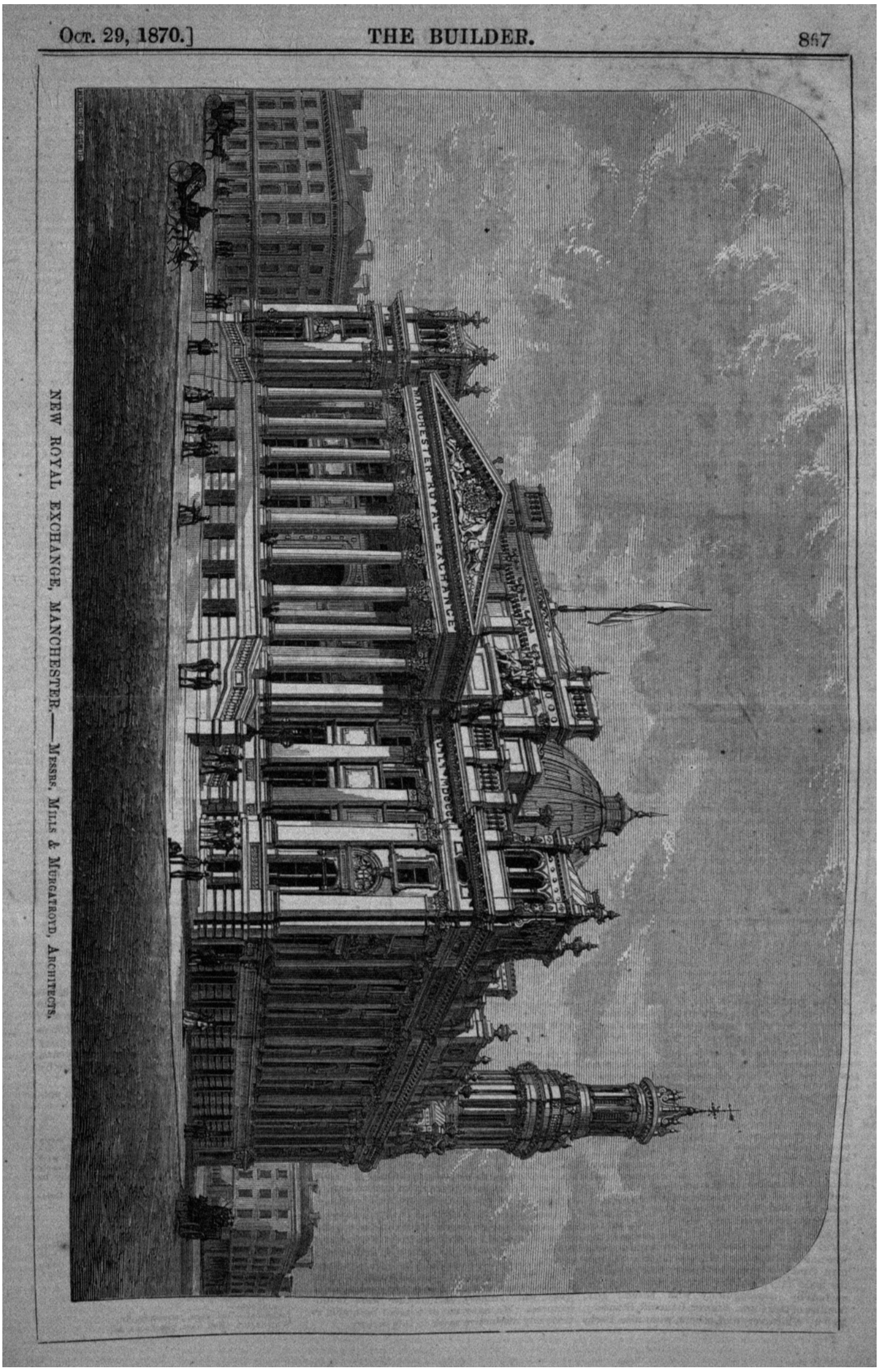
This factory must have been upon a very large scale, and probably was even more extensive than the Derby Works, which it preceded as a china manufactory, but to whose rising power it was obliged to succumb in 1777, when it was finally broken up. The goods made here were of the very finest description, and specimens may occasionally be met with, both of china and earthenware, the decorations of which are very similar to those of Lowestoft. The green colour is bright and peculiar, and the paste is white and very translucent. The pottery from this factory is remarkably soft and fragile. Some articles in white (soft paste, with a thick glaze), with plain gold lines, are elegant in the extreme. No writers upon the history of Derbyshire porcelain have hitherto given any idea of the variety of valuable works turned out from this factory. We are in a position to state that figures of a graceful character, beautifully moulded urns and lamps were made here. In addition to these articles, tea-ware, of a fine and transparent paste, and ordinary earthenware were manufactured. We have not at present been able to trace any distinctive mark to this factory.

Pinxton China Works.

A China Factory was established here about 1795, by Billingsley and Mr. Coke. The paste was of peculiarly fine and transparent character; but the decorations were by no means upon a par with the quality of the material. Billingsley left the concern, after the lapse of a few years, and an inferior description of ware was made by Mr. Cutts, until about 1812.

We note the following list of Derbyshire potteries:—

Alfreton—Red ware.
Belper—Gutter stone-ware, bottles, pitchers, &c.
Brampton—Pot works have been carried on for many years at this outskirt of Chesterfield, for the manufacture of brown-ware flower-pots, &c. Potter's clay of a yellowish or grey colour is found in this neighbourhood; and early specimens of Chesterfield pottery may thus easily be recognised by this tint.
Chesterfield—White, brown, and red ware, and drain-pipes.
Church Gresley—White, yellow, and red ware.
Hartshorn—Various.
Denby—Stone bottles. A fine class of ware wes attempted here in imitation of Wedgwood's black Egyptian, by Mr. Bourne. We have a jar in this material, with cameo groups in the Etruscan style, bearing the stamp E. Bourne, which came from the immediate neighbourhood.
Ilkeston—
Newbold—
Smalley—Water-pipes.
Swadlincote—
Tickenhall—Red ware, pancheons, &c.
Whittington—Red ware, pancheons, &c.



NEW ROYAL EXCHANGE, MANCHESTER.—Messrs. Mills & Murgatroyd, Architects.

MANCHESTER ROYAL EXCHANGE.

The Manchester Royal Exchange, of which we this week give illustrations, is now being erected under the direction of Messrs. Mills & Murgatroyd, architects. The building occupies a portion of the site of the Old Exchange, erected some twenty years since, together with a considerable additional plot on the east side thereof, the total area covered being 5,400 square yards. The land being, from its central position, about the most valuable in Manchester, the proprietors were compelled to look to other sources of revenue besides their subscription list (now numbering upwards of 6,000 members) for a return upon their capital of 450,000*l.*; and as the irregularity of level of the surrounding streets, which will be considerably widened by portions absorbed from the site purchased, necessitated the floor of the Exchange-room being placed some distance above the level of the lowest point, it was determined to make that distance sufficient for obtaining shops below the room, and fronting to three of the streets.

Behind the shops are spaces adapted for stores and a restaurant, and also a central hall, approached from Bank-street, in which carts can be loaded and unloaded in connexion with the two stories of fire-proof cellars reaching to a depth of 24 ft. below the street level. The service to these cellars will be by means of hydraulic hoists. The ceiling of the shops, central hall, and stores, forming the floor of the main room, is fire-proof, consisting principally of rolled iron joists and concrete.

The main entrance to the room is in Cross-street, and consists of an octostyle Corinthian portico, approached by a flight of steps on either side: the columns are 3 ft. 6 in. diameter, and 35 ft. high; and the pediment will be filled with the Royal Arms removed from the Old Exchange, with its supporting figures, &c., and which was a work of the late John Thomas.

The Corinthian order is carried out throughout the fronts of the building. Besides the principal entrance in Cross-street, formed by a fine granite-cased opening from the portico, there are other subsidiary entrances near the four corners of the building; the one at the corner of Exchange-street and Market-street being surmounted by a tower, 180 ft. high, forming a central feature at the end of Victoria-street, which approaches the side diagonally on the axis of the tower. The windows in the angle blocks or pavilions, containing the staircases, have arched heads, which will be filled with groups of sculpture, by Mr. E. G. Papworth, by whom also other figures and groups have been prepared for suitable places intended for their reception, all being illustrative of the industries of the principal towns of Lancashire and of the nationalities with whom her commerce is conducted.

The plan will show the general arrangement. The whole area of the site at this level is, with one or two trifling exceptions, given up to the use of the subscribers, the area of the room itself, of which we shall give a view, being of the large extent of 4,050 superficial yards, as against 1,620 in the old building. This is exclusive of the reading-room (340 square yards), portico, &c.

The room may be said to consist of a central nave, 96 ft. between the walls, and side aisles beyond, extending to the outer walls of the building. The nave is surmounted by a large central hemispherical dome, 62 ft. in diameter, carried on pendentives, and by two smaller segmental domes, the height from the floor to the eye of the central dome being 120 ft. The aisles are less in height than the nave, and above them are constructed ranges of offices, &c., approached by the staircases shown on the plan, and which will be let off, and will no doubt be found very convenient for merchants and others having business to transact on the Exchange. The architectural arrangement of the large room consists of a range of arches springing from pier to pier, these being separated on the side next the nave by columns of red Irish marble, 3 ft. 2 in. diameter and 33 ft. high, and standing on grey marble plinths, 5 ft. high; the large pilasters, also, are cased with red and grey marble, all being from the quarries of Messrs. Sibthorpe & Son, of Dublin. Above the entablature is a clearstory, the shafts carrying the arches of which are of terra cotta, made by Messrs. March & Sons, of Berlin. All the lights of the clearstory will be made to open by machinery for ventilation, for further promoting which shafts are prepared, through which warm or cold air is intended to be driven into the room by a fan and steam-engine placed in the basement.

The contractors for the works are Messrs. Parker & Son, who have themselves executed the masonry and brickwork; Mr. Southern being the contractor for the carpenter and joiner's work, and Messrs. Jaffrey & Lightfoot for the plumber and glazier's work, and for the copper with which the domes and a large portion of the roof of the building will be covered. The plastering has been let to Mr. Harwood.

REFERENCES TO PLAN.

A. Portico and Main Entrance.
A¹. Vestibule.
B. Centre Compartment.
C. Aisles.
D. Staircases from street level to Exchange Room and Office above the aisles.
E. Staircase to Reading Gallery, extending over aisles from E to G.
F. Pay-desks and Offices.
G. Secretary.
H. Committee.
I. Safe.
J. Attendants.
K. Lavatories, &c.
L. Offices.
M. Service Stairs.

WORTH CHURCH.

Sir,—It is the invariable habit of human nature to shrink from unpalatable truths when affecting itself, and no one can feel aught but sympathy with those who defend themselves manfully and sturdily against false accusations; but it sometimes necessarily happens that truths, however unpleasant, *must* be told,—witness your own homethrusts, Mr. Editor, at Newcastle, and your equally straightforward words about Worth. It does not always occur, however, that the defences made are hidden under a bushel; yet in the case of the old Saxon church, even your ubiquitous eye has failed to light on a report of a meeting of the Sussex Archæological Society, published in the *Sussex Express* of the 11th inst. Perhaps it has been intentionally kept out of your sight, because you are roughly and not quite courteously handled. Had you seen this article it would have been promptly replied to; and the absence of such reply in your last issue must be my excuse for sending you the newspaper in question. I should strongly recommend you to print it entire, as the most effective gibbeting you could apply.

I am tempted to make a few observations on the subject itself, as well as on the speeches of the Sussex Society, because the inference to be drawn from them is that the members were enlisting the sympathies of the world against unwarrantable attacks made by the *Builder* alone. Why, sir, the whole architectural profession and the distinguished archæological societies were in arms at the desecration of the place. We know that the Royal Institute of British Architects and the British Archæological Association protested (alas! too late) against any "restoration" in the way in which it was being carried out; and why is there comparative silence now? I will answer the query,—Because it is known that nearly all the mischief is done, and because it is known that no protest would avail against the determination of the local authorities, who have all along exulted in what has been and is being done. Let them, and all our Sussex friends, thoroughly understand that every soul who understands anything of the matter is altogether with you, sir.

Now, sir, let us look a little into the castigation intended to be applied to your guilty back. I have taken the trouble to analyse the matter, and I find that "about thirty" persons were present, which, of course, means *fewer* than thirty, of whom twenty-three or twenty-four are named specially: there were five or six ladies, nine clergymen, and nine laymen. Of course, there were three or four of the press, otherwise the toast of "the press" would scarcely have been proposed. So, you see you need not wince under the lash, however heartily administered; for the ladies would hardly venture an opinion, and the clergy hang together like certain other persons; and of the laity not one, I venture to say, should assume to speak for the very respectable and talented members of the Sussex Archæological Society. There are several of its members eminent in their profession as architects, and equally eminent as antiquaries; but they were conspicuous by their absence. A sentence occurs in your last number (in a review, page 839) which may aptly be repeated here: "There has been too much of dilettanti writing on architecture; and a small book on a great theme should only be attempted by those who have thoroughly mastered the subject." Only change the word *writing* into *speaking*, and it applies to a very large number of amateurs (mostly clerical) who treat of "things that they don't understand." It would be amusing, if it were not deplorable, to hear it said that "it was an agreeable surprise to find the ancient fabric standing with all its most interesting features not only unscathed, but positively improved by the work of restoration, and risen like a veritable phœnix from the ruins of its old materials." Was the writer aware, I wonder, that the chancel, at least, had been entirely removed? Some credit is taken, too, for the removal of the wooden spire. I doubt if much was ever said in its favour, and no "great outcry" was raised at its removal, but at the possible consequences to the older work; and it may fairly be a question whether a new tower should have been erected, and where its position? This is but an attempt to divert the real complaint.

Hoping that you may live long to help with your good pen to preserve our historical landmarks, I am, &c., F. S. A.

MATTERS THEATRICAL.

Mr. Buckstone and his company having returned after a lengthened gold-digging expedition in the provinces, both English and Scotch, the *Haymarket Theatre* was re-opened on Monday evening with Sheridan's comedy of "The Rivals," and was filled from top to bottom: a good indication. The comedy was, for the most part, exceedingly well played, Mr. W. Kendal making a good *Captain Absolute*, and the lessee an unapproachable *Bob Acres*. Mrs. Chippendale, Mrs. Kendal (Miss Madge Robertson), and Mrs. Fitzwilliam contributed importantly to the good whole. The novelty of the evening was a comedietta by Mr. Theyre Smith, called "Uncle's Will," wherein Mr. and Mrs. Kendal acted admirably. It is similar in character to "A Happy Pair," in which Miss Herbert and Mr. W. Farren distinguished themselves, and is nearly as good. The writing is bright, and the story compact. Mrs. Kendal, who has a good future before her, has since acted in the "Love Chase," with remarkable success.——At the *Olympic Theatre*, Mrs. W. L. Liston, earlier known as Miss Maria Simpson, shows considerable taste and skill in the getting up of such new pieces as are produced there; thus, in the musical extravagance called "Paul and Virginia," the scenery, dresses, and appointments are all elegant and appropriate, and the vulgarity of the modern burlesque is avoided. We would rather not see Mr. George Belmore (*Virginia*) descend to the female part, cautiously as he acts it. Mr. Belmore is one of the best actors on the stage, and should now be confined to worthy parts. His acting in "Little Em'ly" is of itself sufficient to prove our assertion. Other parts in this drama are admirably acted, notably by Mr. David Fisher, Miss Ernstone, and Miss Reinhardt, and with the scenic effects and the interest of the story, sufficiently explains its continuing success. ——The *Manchester Theatre Royal* had an escape a few evenings ago. The company were engaged in the rehearsal of a piece called "The Odds," and a fire broke out in the property-room, which is immediately over the large gaselier in the auditorium. It was extinguished before harm was done to the building, but many of the properties intended for the Christmas pantomime were destroyed.——In this piece as now acted in London at the *Holborn Theatre*, one main feature is a mechanical scene representing an express train in motion, at night, and the perpetration of a crime. It is very well managed, but not so well as at the *Surrey Theatre*, where the same scene and effect are introduced in a drama called "Link by Link." Here the rapid passage of the landscape behind (made more evident than at the *Holborn*) and the movement of the smoke render the illusion remarkably perfect. The piece itself is hazy, but two or three of the parts are very well played. Mr. E. T. Smith should make some arrangement to lessen the draft in the dress-circle, which especially by those near the centre, is unbearable. If managers knew how many persons stay away from theatres because of the difficulty of avoiding cold and stiff neck, they would make some attempt to lessen the draughts which blow away money. The upper boxes at the *St. James's Theatre*, where, thanks to Mr. Beazley, a third of the people cannot see the stage, are very bad in this respect. At this theatre, by the way, Mrs. Vezin's acting in the English version of "Fer-

nande" is entitled to the highest praise, and shows her to be an artist of the highest ability. She is well supported by the lessee, Mrs. John Wood, and by Mr. William Farren, who has grown grey hairs, and is laying himself out for parts made famous by his father. We are anxious to see his *Sir Peter Teazle*, which has long been promised.——One line to recommend those who like to see to what perfection gymnastic exercises can be brought, to go to the *Royal Amphitheatre*, in Holborn, the Astley's of to-day, and we end our paragraphs. There are also some elegant riders and very docile horses.

HEAD *versus* FOOT.

"R. T." writes,—

I had a conversation lately with a country gentleman; subject, "Killing occupations." I mentioned what I saw near Windsor Castle,—numbers of women employed in autumn spreading manure over the fields; a filthy, cold, and damp occupation for females. He drew attention to the poor work-girls in London, who, splashing through the mud noon and night, their *shoes* often a bunch of wet fragments, sit all day in these damp *things* in a fetid atmosphere: frequent illness and short lives are the inevitable consequence. Employers of these silly girls should insist on less flaunting head-gear of feathers, flowers, bows, veils, &c., and better "*understandings:*" this would promote the health and interest of each. One other matter touching the feet. Kamptulicon, a beautiful soft and warm substance, has obtained a bad report on account of its lying close to flooring: not allowing moisture to escape, the boards speedily decay. The idea of perforating stars, diamonds, or other devices does not seem to have occurred to the manufacturers, to enable it to retain and maintain its footing. In this shape it would again become first favourite: 2 to 1 against floorcloth. One blow of a mallet would punch many holes.

THE HARROW-ROAD IMPROVEMENT.

Some time since the inhabitants of the Harrow-road waited upon the Paddington Vestry and requested them to widen the Harrow-road by pulling down the north side, from the Edgware-road to Paddington-green; also a portion of the west side of the Edgware-road. The Vestry referred the matter to the Metropolitan Board, who instructed their architect to make an estimate of the cost, and he estimates the cost of the improvement at 138,000*l.*, and the net cost at 100,495*l.* The Board of Works consent to carry out the improvement provided the Vestry will pay half the cost, and last week the subject was discussed in the Paddington Vestry, when it was resolved that the offer of the Metropolitan Board be accepted. This desirable improvement will therefore be carried out, and the road, which is only 19 ft. wide at one part, will not only be widened, but a large number of courts at the back, the houses in which are in a miserable condition, will be removed. The money will be borrowed under the terms of the Metropolitan Consolidated Loans Act, and the repayment will extend over a period of sixty years.

THE WATER-GATE.

May I trouble you once more upon the subject of the "York Stairs?" I was glad to find a sympathiser in "Father Thames," who made himself heard to purpose in your impression of the 1st inst. I have obtained permission to sketch and measure from the Office of Works, thanks to you, and have availed myself of the same. I learn that the "gate" is claimed by the inhabitants of Buckingham-street, but it may be they would refer the ownership to other parties if interrogated.

It would be well to find out who really are responsible for the ignominious position and state that this relic of so great a genius as "Jones" has now become reduced to. It is often said, with some truth, that where an evil is made known, or complained of, it were well to propose a remedy. I have therefore one of two suggestions to propose as a remedy, or way out of this difficulty, if the incorporation with the "Embankment" of "York Stairs" is so regarded, viz.:—

I would suggest that it should be carried down the river, and erected as a "Water Gate" to that magnificent work of Jones's contemporary, viz., Wren's Greenwich Hospital. The quay and esplanade in front of the hospital would be greatly enhanced by the addition of such a beautiful feature. Moreover, it would be in harmony with the grand Doric colonnade, and give a completeness to the river front which it does not now possess. Here there is no "granite" to clash with the more modest Portland. It might thus occupy even a more honourable position than it ever did; and would be useful as a landing or embarkation-place upon State occasions. Moreover, it would thus exhibit the two greatest architects of England in juxta position.

If Her Majesty's Office of Works are really responsible for the proper sustentation and care of this gate, surely this proposal on the face of it would seem a good and convenient one for them; and should they have nothing to do with it, I fancy the undertaking would not prove so very costly to some one of those noblemen who are still to be found amongst us as *encouragers of art and native artists*. It would reflect much honour upon him, and render the nation obliged.

R. P. W.

THE WEDNESBURY TOWN-HALL COMPETITION.

About twenty-five designs were sent in, and last week the Board adopted the report of the Building Committee. The sealed envelopes sent in by the various competitors were then opened. The names were as follow:—1st. "Paix," Mr. J. Loxton, Wednesbury; 2nd. "Square and Compasses," Mr. S. Horton, Wednesbury; "Experiar," Mr. G. B. Nicholls, West Bromwich. The premium in the first case was 25*l.*; 2nd, 12*l.* 10*s.*; 3rd, 5*l.* The premium in the first case will be merged in the commission. The chairman remarked that Mr. Loxton would have to give up his seat at the Board, as he would be an interested party, and it would not be considered fair for the funds of the Board to be passing through his hands, his design having been accepted. More than one correspondent has remarked that the competitor receiving the first premium is one of the members of the Board; secondly, that the other is a Wednesbury man; and, lastly, that the third is an inhabitant of the nearest place to Wednesbury, adding, "that the whole is the result of local influence."

Sir,—As one of the competitors for the Town-hall, Wednesbury, I beg to inclose a speech made by one of the committee containing his ideas of justice to the unsuccessful competitors which may be useful to the profession:—

"Mr. Hatton, as a member who had not been privileged to examine the designs, was pleased with the proposition of a fortnight's delay that he might form his own opinion and vote with a full knowledge of what he was doing. He inquired if it would be possible to modify the plans which were preferred, and combine them with any improvement which might be shown in any of the other plans?"

"One whose Brains might have been Stolen."

CAN A JOINER BE A GENTLEMAN?

Sir,—In speaking of "the habits of working men not long ago," Mr. Rawlinson is reported in the *Builder* to have said:—"It was, so far as my experience went, the common conversation among working men, that the cleverest man was a good drinker, and a good fuddler. All operatives connected with the building trade," in his time, "were connected with drink and degradation." Assuming that this sweeping assertion is true, will you kindly allow me space to glance at a few more habits with respect to "workmen not long ago," and also of the present day. Although they are different from those which Mr. Rawlinson has spoken of, and which are looked upon as good habits by educated people, yet they are just as degrading to the artizans as either "drinking" or "fuddling." No matter how much the mechanic may know, either in connexion with his trade, the ways of the world, or of those matters which his friends and well-wishers think he ought to know, he is still looked upon as a common mechanic, and expected to look up to, bow down before, and touch his hat to, those who his little knowledge tells him are only men like himself. He is expected to be slavish when he feels that to be respectful ought to be enough. I could name an estated gentleman who wrote to an employer asking what kind of men he sent him, saying they neglected to touch their hats when they met himself or his lady. It mattered not to him whether their hands were full at the time or not, he expected what he looked upon as his due. I was called to account not long ago for having the audacity to give a double knock at a doctor's hall-door, for whom I was going to work; forcibly reminding me that, no matter how much I knew, I was only a "common carpenter." Although it may appear strange, it is still a noticeable fact, that the cleverest workmen, as a rule, are fond of intoxicating drinks.* This may be partly accounted for by the fact that there is no recognition for them on the part of clever people out of their own class or calling. Their minds, being more cultivated and more prolific than the minds of the dunces amongst whom their lot is cast, when they are considered intruding if they attempt to make free with those of an equal turn in what is called a higher position in society, it is no wonder they would become peculiar in their ways, and take to fuddling and eccentric habits. Better for them they never went beyond the three Rs, along with knowing how to bow down to the lords of the soil, and to give a single knock when they approached an apothecary's residence.

While the barriers that lie in the way of the working men who seek to rise in the social scale are allowed to remain, it is useless to invite them forward. There is no recognition, no reward, for those who strive. He who succeeds in advancing a few steps beyond the ordinary drudge often finds his knowledge a great inconvenience, and a curse rather than a blessing. In such a case ignorance would be preferable, and he might in such a dilemma murmur to himself,—

"Where ignorance is bliss,
'Tis a folly to be wise."

Before any material good can be effected among the working classes, those above them will have to cede a great deal. As Mr. Hastings said in his late address before the Social Science Association, as reported in the *Builder*, they "must abandon that exclusiveness which in education, as in other things, is too prominent a characteristic of Englishmen." "A common carpenter," who masters half the theory of architecture, or who is capable of understanding the language in which it is explained, must be a fair English scholar, and what is more in keeping with the latter word than that of gentleman.

The very first hardship that presents itself to the mind of an intelligent mechanic is that he is doomed to labour ten hours out of the twenty-four for his day's living, or twelve for that matter, since he has often to exert himself as much as if he were working during meal-hours. He would be an idler indeed who would object to render a reasonable amount of labour in return for his living; but no intelligent man likes to be a drudge. Ten hours' shaving, and hammering, and making of joints is the height of drudgery, and severely trying to the mind of any man who has a taste for knowledge. The cry is, We want good artizans; to which the response is, Let us educate them. The knowledge that fits a man to be a good workman also creates a taste for more knowledge, and the consequence is that an aversion to be a drudge is felt, and the operative aspires to a higher position in society than is at present allotted to him. If this position were left open as the reward of those who made themselves clever, the results would be pleasant to contemplate. Those who were only fit to be drudges would be separated from those who had brains, and whose prejudices would soon disappear in the struggle for the reward. A joiner, who would be reckoned master of his business should be conversant with the construction of a building from the foundation to the roof. Those who know the amount of study that would be required before this could be attained would not object to the reform,—the first and most essential—a reduction in the present hours of labour. There is at present in London a movement in contemplation for the attainment of this most desirable reform, which philanthropists and others who seek the elevation of the working man would do well to patronise and assist with their money and their influence. A similar movement was defeated some years ago amid the plaudits of educated (?) people; yet what was the victory, after all, but that of the lion over the mouse? As the mechanic cannot be instructed to properly execute the plans and carry out the ideas of the opulent without creating in him the elements of refinement and a distaste for drudgery, would it not be well if the demands which these feelings stimulate were complied with, and, if for nothing else but his intelligence, look upon him as capable of becoming a gentleman?

A Journeyman Joiner.

* Although we allow our correspondent to "say his say" without other comment, we think it necessary to dissent from this assertion.—Ed.

THE STEAM ROLLER, MARYLEBONE.

Sir,—In your last issue, you were kind enough to take notice of my report on the recent steam rolling of roads in this parish; but I regretted to find the name of our vestry clerk inserted instead of mine.

As I have for several years recommended and reported in favour of rolling macadamised roads, and, by request, have given opinions thereon to various authorities, you will be doing me a great service, and I shall be much obliged, by the insertion of this in your next publication.

T. Gaul Browning,
Chief Surveyor for Marylebone.

VAULTS UNDER ROADWAYS.

At the last meeting of the St. George's (Hanover-square) Vestry, the Rev. H. Howarth, the rector, in the chair, the Works Committee reported recommending that an application for permission to build vaults in Duke-street, Grosvenor-square, to the house 277, Oxford-street, as per modified plan submitted, be refused.

Mr. J. Morris moved the adoption of the report on the ground that the vaults would extend under the roadway beyond the kerb line.

This being seconded, Dr. Appleton moved, as an amendment, that the application be granted. The vaults under the roadway were not likely to be injured by gas or water pipes being laid down.

At his request, the Clerk read a letter from Mr. Rickman, the former surveyor, setting out that it was the custom in St. George's to allow vaults a length of 12 ft. in the clear between the area and head walls, the end wall being at least 1 ft. 6 in. from the sewer. The surveyor remarked that the vaults proposed would be 5 ft. from the sewer.

Colonel Knox seconded the amendment.

Mr. J. Morris said that the vaults would be entirely new.

Mr. Pickett remarked the extension contemplated was only a brick thick.

Mr. Sapwell said, in his experience as a builder, he had never heard of this line of kerb frontage dogma before.

Mr. Mitchell asked the vestry to support the wholesome doctrine that the pavement should cover the vaults.

Mr. Adkins submitted that the question was—did these vaults extending under the roadway interfere with any public or parochial rights?

Mr. Vane said if the motion were passed the applicant could retain his vaults, or ask permission of the Metropolitan Board for an extension. The 101st section of the Metropolis Local Management Act spoke of new vaults; but this was a case of rebuilding. He did not think it fair to refuse the application.

The amendment being put was carried.

NEW INFIRMARY, KENSINGTON WORKHOUSE.

Sir,—As you, in the early part of this year, inserted the result of the competition for these buildings, giving the following estimates for the architects;—Snell, 24,85*l.*; Williams, 22,500*l.*; Stanham (stated at 40,000*l.*, but should have been) 32,117*l.*; allow me to observe that it was stipulated, on the part of the guardians, that no architect's drawings should be received whose estimate for the works should not be within 10 per cent. of the builder's tender. Now, sir, your late issue shows the range of those tenders, the lowest and accepted being that of Mr. Chappell, at 33,233*l.*,—in excess, say, of about 5 per cent. of my estimate, which includes a large amount for machinery, &c. I know it may be said that the drawings for the buildings have been altered and other arrangements provided for; but I also know that the drawings I submitted could have been similarly treated, and that the difference would have been on the side of "deductions." All competitors cannot win in a race; but the rules of the race ought to be observed throughout.

Gordon Stanham.

SURVEYORS' CHARGES: KENSINGTON WORKHOUSE INFIRMARY.

Sir,—Seeing in your impression of the 15th October inst. a letter on surveyors' charges, I should like to ask you whether the other "rumour" going about is correct, viz., that 3 per cent. has to be paid by the guardians of the above workhouse for the supply of quantities for the new Infirmary building.

Report says that a firm of surveyors volunteered to the guardians to take off the quantities at ½ per cent.; also that another firm "caught" the builders, and in "connexion" with the other surveyors prepared the bills of quantities, charging at end of same 2½ per cent., thus making 3 per cent. as charges for the guardians to pay directly and indirectly. Of course the innocent guardians believe the work to have been done at the ½ per cent. as agreed, if report be true.

Now I am of opinion, as all candid men, whether ratepayers or otherwise, must be that such practices as these will bring the profession into discredit.

A Ratepayer.

ADDRESS FOR KEYS.

Sir,—The first of "Mitrailleuse's" wants, as stated in the *Builder*, was anticipated forty years ago, by the late Mr. Charles Chubb. We enclose you a key chain, with the label attached, having our name and address on one side, and 5s. reward, and the number 7,536 on the other. Each label has a separate number, and we keep a register of the purchaser's name and address. Scarcely a week passes without our having one or more bunches of keys brought in, and we are thus enabled to return them to their rightful owners.

Chubb & Son.

RESTORATION AT THE BRITISH MUSEUM.

Sir,—As Mr. Newton may not be aware that persons make use of soap lees in cleaning marble (and being of a burning nature), he had better for the future let well alone, and not attempt to wash a blackamoor white.

W.

TAR PAVEMENTS.

Sir—My attention having been drawn to the article in the *Builder* on Tar Pavements, by "The Layer of this Pavement," I noticed that Stockholm tar was specified, and would feel obliged if your correspondent or any of your readers would inform me, through your valuable publication, why gas tar would not answer the same purpose.

G. H.

ASPHALTE ROADWAYS.

Sir,—The new pavement laid down in the carriage-way of Cheapside seems likely to get into disfavour from proving very slippery, the number of falls being greatly on the increase in wet weather; not so much, however, from heavy rains, as from slight or partial showers, which moisten the surface without cleansing it. If tried again, I think it might be laid down with a more gritty surface: at present it is too smooth for rapid traffic.

P. N. Row.

FISH AND DRAINAGE.

Sir,—Having read much about outfalls of farm drainage by pipes being conducted into a pond made to collect the waters for use against dry seasons, I would ask, is it in the power of any of your readers to tell me what fish would thrive best therein. I have read that the Dutch always plant water lilies to purify the waters, and preserve the fish in such ponds. Could they also be completely aërated as against stagnancy, by an ordinary exhausted syphon fixed to a post? Would the action of the syphon be continuous?

Civis Londinensis.

EAST INDIAN RAILWAY.

A district engineer in the service of the East Indian Railway Company, writes to an agent as follows:—

"I am of opinion that it is a great piece of presumption on the part of a contractor's agent to attempt to judge as to the ability or experience of a company's engineer."

Now this in itself is ludicrous, but unfortunately there is another phase besides the comic one. The feeling that prompts the expression of such an "opinion" will go far to solve in a great measure the queries as to why the "Chord Line" is not finished and open.

Old Indian.

TAUNTON COLLEGE SCHOOL BUILDINGS.

The new buildings of the Taunton College School have been opened. The first stone of the new building was laid by Lady Taunton in 1868. The new school is situate on the Chard-road, about a mile from the centre of the town. It is built of West Monkton stone faced with Bath; and stands in fifteen acres of ground. The west front, which faces the high road, affords accommodation for 120 boarders. A lobby divides it into two complete blocks. This lobby is entered from the principal gateway, in which has been placed a marble bust of the late Lord Taunton, presented to the college by Lady Taunton. Each block contains twelve studies, two large boarders' common rooms, and a master's room, while there are two dormitories 60 ft. long, a bath-room, &c., on the upper floor of both, besides a master's bedroom. A high corridor traverses the range, the whole being warmed by Moule's heating apparatus. The common room and dormitories are lighted by sunlights, and ventilated. The educational department includes a school-room, 90 ft. by 30 ft., class-rooms, a day-boys' common room, and a small lavatory. Following the corridor, which runs at right angles to the centre block, we find on the one side the masters' common room and the dining-hall, and on the other the matron's rooms and the sick rooms. The present design also includes a kitchen, scullery, buttery, and larder, with steward's rooms, servants' hall, bedrooms, and offices. It is intended to add to the structure a head-master's house, two more blocks for boarders, and a chapel on the south side; and parallel to these from the centre of the group will be the library, museum, laboratories, and school of art.

A botanical garden is to be laid out on two acres of land adjoining Holway-lane, and near the garden a large swimming-bath will be made. The grounds will also contain a gymnasium, fives and racquet courts, and workshops for the boys.

Certain rooms not at present used have been temporarily fitted up as library, museum, and laboratory; and an iron chapel has been put up until the permanent one shall have been erected.

The building has been carried out from designs by Mr. C. E. Giles, of London. The builder is Mr. Spiller, of Taunton; the carvings are by Mr. Seymour, and the grounds have been laid out by Mr. Dyer, both of Taunton.

DISSENTING CHURCH BUILDING NEWS.

Stone.—A new Congregational chapel has been erected at Stone. The sum of 3,500*l.*, it is estimated, will be required. The new church is to be erected on a site in Granville-place, given by Mr. Thomas Bostock. The style will be Geometric Gothic. The walls will be brick-faced, having stone dressings. The centre of the west or principal front will be gabled, and over the entrance doorway will be a large five-light tracery-headed window. At the south-west angle will be a tower, with spire, rising to the height of 80 ft., and the north side of the west front an octagon staircase wing. The north and south fronts will be divided by buttresses into bays, with two tiers of windows, the lower lighting the ground floor, the upper lighting the gallery, of the church. The dimensions of the church will be 65 ft. by 38 ft., and, including the galleries, it will seat about 700. Internally, the roof will be in part open, showing the timber framing as far as the collar-beam. At the rear of the church, but having a south frontage to the Longton-road, will be school buildings, two stories in height, the lower story arranged for vestries, class-rooms, and infant-school, and the upper story as a large school-room, 44 ft. by 27 ft. The architect is Mr. Bidlake, of Wolverhampton. The builder who executed the work necessary for the laying of the foundation-stone was Mr. R. Turner, of Stone; and Mr. Wood prepared and engraved the stone.

North Shields.—The foundation-stone of the new Wesleyan Mission Chapel, Collingwood-street, North Shields, has been laid. The design is by Mr. F. R. N. Haswell, architect, under whose direction the building will be completed. It will be composed of brick, with stone dressings, and will comprise a chapel, with school-room and vestries underneath. The former, with minister's vestry behind, will be 37 ft. 6 in. in length by 54 ft. 6 in. in breadth, and sitting accommodation will be provided for about 390 persons. The school-room, with two vestries, is 37 ft. 6 in. in length, by 38 ft. in breadth. The building, exclusive of the ground, will cost fully 900*l.* The contractor is Mr. Campbell, of North Shields, and the building will be erected under the superintendence of the architect.

Liverpool. — The foundation-stone of the Toxteth Tabernacle has been laid by the Rev. C. H. Spurgeon, in Park-road, Toxteth Park. The chapel will be erected from the design of Mr. W. J. Mason, architect. It is in the Italian style, and very plain in treatment. The elevation to Park-road is divided into three spaces corresponding with the lines of the columns and the central nave of the interior. The central portion is 37 ft. wide, projects slightly beyond the line of the main building, and is divided into compartments with pilasters having carved capitals, from which spring three arches, surmounted by an entablature and pediment. The side spaces or wings are repetitions of one bay of the side elevation. The entrance to the chapel is by a flight of steps, 37 ft. wide, on to a platform the full width of the building. The sides of the chapel are divided into six bays by pilasters, and, including the school, will contain three stories of windows variously treated. The work, generally, is to be of the best grey brick, relieved by the introduction of white and blue bricks in the arches, jambs, cornices, bands, &c., the stone dressings being of white Storeton stone. The chapel is 94 ft. long by 70 ft. wide, outside measure, including the vestries. The front and back walls internally are segmental, and in each angle of the building there is a staircase to the gallery. The seats on ground and gallery floors are arranged on the curve, so that each person faces the platform. The chapel will accommodate 1,200 persons. The ceiling is arranged in three divisions, the centre or nave being 38 ft. high from the ground floor, and each side compartment 30 ft. high. The roof is carried on two rows of iron columns with ornamental carved caps. Underneath the chapel is the schoolroom, 66 ft. by 53 ft., and 13 ft. high, approached by side porches, under the platform of the main-entrance steps to the chapel. There are also on the basement an infants' class-room, tea-room, and chamber for hot-air apparatus. Behind the chapel, on the ground floor, are three vestries. The means of ingress and egress consist of five doorways in front of the chapel and two doorways at the rear, all connected with the ground and gallery floor. The contract for the works, exclusive of excavations already done, also of fittings, seats, &c., is 4,900*l.* The works are being carried out by Messrs. Haigh & Co. under the superintendence of the architect.

Jarrow. — The foundation-stone of a new Wesleyan Methodist Chapel and School, at Jarrow, has been laid. The new chapel will be situate in a triangular plot of ground on the west side of the New-road, where, passing under the railway, the Monckton-lane and Newcastle roads meet. The school and vestry accommodation as well as the chapel-keeper's rooms will be on the basement floor, while the entrance to the ground-floor of the chapel will be on the level of the road at the east side of the site. This entrance will be a large circular-headed door into a lobby, connected with which are the inner lobbies, containing the staircases to the galleries and inner doors into the chapel. The pews will be arranged in three groups on the ground-floor. The pulpit and communion space will be at the west end. Behind the pulpit will be a ministers' vestry, above which will be the organ gallery. The side galleries will have three pews in depth, with a seat in the passages against the walls. The end gallery will be continued over the entrance-lobby, and will have ten pews in depth. The length of the building inside will be 76 ft. (exclusive of organ gallery, 12 ft.), and the width will be 47 ft. The school-room will be 47 ft. by 36 ft.; and of the two vestries, one will be 20 ft. by 15 ft. 6 in., and the other 18 ft. by 10 ft. 6 in. There will be three rooms for the chapel-keeper. The buildings are to be of red brick, with stone dressings; and the style of architecture is to be Italian. The internal fittings are to be of pitch pine; and the heating is to be by hot air. The chapel will accommodate 900, and the cost will be 3,000*l.* The buildings have been designed by Mr. F. R. N. Haswell, North Shields, who has been architect of many chapels for the Wesleyan body in this part of the country.

Bolton.—The chief stone of a Wesleyan school chapel has been laid in Fern-street. The new building will occupy the whole of the site of the old school and yard adjoining, as well as an additional plot beyond, which has been pur-

chased, and which adds 10½ lineal yards to the length of the plot. A continental style of Gothic architecture has been adopted, the principal features being confined to the front, extending along Fern-street to the full length of the land available. The main building will be lighted by five windows on each side, and the class-rooms, placed at each end of the structure, will have for those on the ground-floor, two windows each, and three windows each to those on the upper floor. The internal dimensions of the large room are—length, 51 ft.; width, 39 ft. 7 in.; and height, 26 ft. to the ceiling, which, in order to gain additional light, will be formed part way up the roof. There will be two front entrances from Fern-street, opening into vestibules, and having doorways leading into the large room, as well as passage to the class-rooms, extending from the front to the back doors at the north and south ends of the large room respectively. The south entrance, or the nearest Pike's-lane, will give access to the infants' class-room on the left of the passage. Over the infants' class-room, the passage and the vestibule will be placed on a large band-room or class-room, which can be made useful for week-night services, tea meetings, &c. Underneath the infants' class-room there will be a cellar, which will be fitted up with apparatus for preparing tea, and hot-air appliances for heating purposes. All the class-rooms can be used without throwing open or lighting the large room, and *vice versa*; and as the building will be used for chapel as well as school requirements, and consequently occupied for many hours on Sundays, special provision will be made to secure efficient ventilation. The estimated cost is 1,192*l.*, which, however, is reduced 50*l.* by the contractor purchasing the old school as it stood; but that sum does not include the cost of warming and other internal fixtures, nearly all of which have yet to be agreed upon. It is proposed to provide, at low rents to defray current expenses, benches or seats in the large room, sufficient to receive 100 persons. The remaining space will be devoted entirely to school purposes, and there will be accommodation in the large room and class-rooms for about 350 scholars, exclusive of the infants' class-room, which will have a gallery for the benefit of the younger portion, and also exclusive of the large class-room over, which will hold 100 additional children, and may be used, if required, for junior scholars. The large room, when arranged for either service or public meeting, will contain 500 persons. The architect is Mr. Thomas Ormrod, of Bolton; and the contractor for the work, so far as it has been definitely decided upon, is Mr. William Donaldson, builder.

Southborough. — The foundation stones of a Wesleyan Chapel have been laid at Southborough. Messrs. Catermole & Ede are the architects, and Aaron Brown the builder.

Long Ashton.—Plans have been prepared for a new Independent Church and School, at Long Ashton, near Bristol, by Messrs. Kennedy & O'Donoghue. The site has been cleared of the present buildings, and it is hoped the funds will soon enable the architects to commence building operations.

Barnard Castle.—The Memorial (Unitarian) Church at Barnard Castle, erected to the memory of the late Mr. George Brown, has been opened. The full cost of the building will be between 1,200*l.* and 1,300*l.*, of which sum upwards of 1,100*l.* have been already subscribed. The cost of the site was 250*l.* Inclusive of these and other expenses, the cost of the new church is estimated at 1,068*l.* The construction of the tower and spire will involve a further expenditure of 135*l.* The new church will seat 200 persons. The ground plan comprises a nave about 35 ft. by 24 ft. inside the walls, and one aisle about 10 ft. in width, a part of which, adjoining the principal street, is divided off, and forms the entrance-porch, and also the lower part of a tower, surmounted by a broach spire, reaching an altitude of about 70 ft. At the opposite end to the entrance an ornamental lectern (to serve as a pulpit) will be placed on a raised platform, which will be partially railed off from the church (for a communion space) with a low ornamental balustrade, and adjoining it will be provided a small vestry for the use of the minister. Adjoining the church is a building of recent construction, intended to be used as a Sunday-school and lecture-room, and occasionally as a part of the church. It is divided from the church by a movable screen, which, besides opening the schoolroom to the church, will also admit of the organ being used either in the church or the school, as may be desired.

SCHOOL-BUILDING NEWS.

Walton-on-the-Hill (*near Liverpool*). — The foundation-stone of a new national school has been laid here. This new boys' school will be erected in close proximity to the present girls' and infants' schools, near the church, and is designed to group with these buildings. The bell-turret, rising to a height of 40 ft., will be a conspicuous object as seen from the Aintree and Church roads. The new school buildings will be capable of accommodating 200 boys, and consist of a school-room, 80 ft. long, 20 ft. wide, and 18 ft. from floor to ceiling; two class-rooms, each measuring 15 ft. by 14 ft., and fitted up with a gallery. There will be also a conveniently-situated lavatory and cloak-room. The ceiling of the school-room will be divided into panels by means of mouldings of stained wood, and the cornice enriched with carvings. The materials to be used in the elevations are grey bricks, relieved with a few bands of coloured bricks; the window-dressings, gables, panels, buttresses, and bell-turret being carried out in red sandstone. Rolled cathedral glass in large squares will be fitted into the stone window-mullions. The rooms will be lighted at night by means of sunlights placed in the ceilings. The building committee have contracted with Mr. Henry Sharrock, of Walton, who is to complete the works by the end of March next, and who will be assisted therein by Messrs. J. & R. Kelly, bricklayers; Mr. Roberts, mason; and Messrs. Ayles, slaters. The plans have been prepared, and the works will be superintended by Mr. Edward A. Heffer, architect, of this town, who is also engaged in carrying out the Church of St. Bridget, Wavertree, and was architect of the Prince Consort Memorial, Hastings.

Walsall.—St. Peter's New Schools, recently erected in Whitehouse-street, have been opened. They form an important addition to the educational resources of St. Peter's parish, and are from designs by Messrs. Nicholls & Chamberlain, of Walsall; and the work has been carried out by Mr. Adkins, builder, Walsall, the amount of his contract being 1,200*l.* The land cost 250*l.* additional. The schools are intended to accommodate 270 girls and infants, the old school-rooms in John-street being left for the exclusive use of boys. The girls' school-room is a lofty, well-lighted room, 60 ft. long by 20 ft. wide, and having attached to it a commodious class-room. The infants' schoolroom, which includes a gallery, is 48 ft. by 20 ft., and, like the larger room, has an open timber roof. Each school possesses a separate entrance, that for the girls being surmounted by a bell-turret. The whole of the woodwork is varnished. At one end stands a residence for the schoolmistress and the boundary wall,—which, in the front, carries a light iron fence,—encloses a spacious playground, with all necessary out-offices. The exterior of the building is of red brick, with stone dressings, and bands of coloured brick.

Shoreditch.—The new wings of Shoreditch Industrial Schools have been opened. Originally the schools consisted merely of a range of rooms facing the Brentwood-road, but the accommodation proving greatly inadequate, the guardians determined to erect two large wings, which would materially increase the accommodation. Hence the schools now form three sides of a square, there being a frontage of 192 ft. to the Brentwood-road, while the length of the wings to the extreme rear is 234 ft. The original building is constructed with a facing of red bricks, while the modern portion is built of ordinary ones, relieved with red. The east wing is appropriated to the girls, and the west to the boys. Each contains a school-room, day-room, plunge-baths, lavatories, and class-room. The baths are 18 ft. by 10 ft., with an average depth of 4 ft. The children bathe twice a week, the water in the winter season being warmed by steam. The apartments we have enumerated are all on the ground floor. On the remaining two stories are the dormitories. The original building is now devoted to rooms for the superintendent, matron, and teachers, infants' school, needle-room, and offices. At the east end is an apartment designated the board-room. The large room at the west end is used as a day-room for infants. Walking down the main entrance, on each side are corridors leading to different apartments, mess-rooms for the officers and servants, clothes' store, officers' kitchen, &c., and the end of the passage leads into a dining-hall (which is also used as a chapel). It is 70 ft. by 37 ft., with a height of 36 ft., and is furnished with uniform seats, desks, and tables. Behind this apartment are different store-rooms, the kitchen, and scullery, and on each side of the dining-hall the large open space—being 164 ft. by 56 ft.—lying between that and the wings is paved with York stone, and used respectively by the girls and boys as a playground. The cooking is done by steam. The outbuildings are numerous. About 40 acres of land are connected with the schools, upon part of which vegetables in sufficient quantity to supply the inmates are cultivated; the necessary farm-buildings being erected in suitable places. The architect employed in carrying out these extensive erections was Mr. W. Lee, of London; and the builders were Messrs. Hill, Keddell, & Waldram, of Kingsland-road; clerk of the works, Mr. Jeffrey. The cost has been altogether about 20,000*l.*, and accommodation will be provided for 600 children. The boys are instructed in various trades, and a large number are drafted into regimental bands, having first gone through a course of instruction under the bandmaster. They are also instructed in the rudiments of drill.

Books Received.

The current Number of the *Quarterly* is enriched with an early *précis* of an admirable and most *àpropos* work, Sir Henry Bulwer's "Life of Lord Palmerston." The war articles, too, are valuable. —— We take from the current Number of the *Academy* a paragraph on "Old Timber Churches of Denmark":—"All the earliest churches in Scandinavia were of timber, and in a peculiar style, which may partly have been derived from the old heathen temples, of which only descriptions are extant. The doors, pillars, and windows were ornamented with fine carvings, representing fabulous animals, most of which, however, have long since mouldered away, or been destroyed by fire. A fine specimen of a church door from Iceland, preserved in the Archæological Museum in Copenhagen, is among the few remains which are left. Norsemen, as well as their nearest kinsmen, the Icelanders, were skilful carvers in wood and walrus. Some of the old Norse 'Stave-Kirks' still exist (Borgum, Hitterdale), but in a tottering or restored state; whereas the Danish are all gone, the last of them having been destroyed about two hundred years ago." ——We have to mention the publication of the 33rd edition of the "New Grammar of French Grammars," by Dr. de Fivas; and the 22nd edition of "Fables et Contes Choisis," by the same author (Lockwood & Co.), both accepted books.——Cassell's Illustrated Almanac for 1871 is a remarkable sixpennyworth.——"Transactions of the Manchester Statistical Society. Session 1869-70." This issue of these Transactions contains an inaugural address on the works of the society in connexion with the questions of the day, by Professor W. S. Jevons, M.A., president of the society; one on some population statistics for sanitary organisation, by Dr. Rumsey; and others on education, and on the cotton exports to India. The inaugural address treats of stagnation of trade, commercial fluctuations, pauperism and the means of decreasing it, and on medical and other charities. On the subject of charities, and the evil lessons of dependence which they teach, Professor Jevons says:—

"The *Times* not long ago published some very remarkable and complete statistics, compiled by Mr. Hicks, showing that the annual revenue of the established charities of London alone amounted to more than two millions a year. I fear that not only is a large part of this wasted in the excessive costs of management, but that a further large portion really goes to undermine the most valuable qualities of self-reliance, and so form a bribe towards the habits of mendicancy and pauperism. . . . At present the result of almost all charitable efforts is to make the poor look upon assistance as a right and natural thing in every contingency of life. If they merely want a little medicine, there is a free dispensary; if they have a bad eye or ear, there are appropriate institutions; if any one is in weak health, he seeks a free order of admission to a Southport or a Buxton Hospital; and when the most natural possible crisis in a poor woman's life approaches, she looks forward to the aid of St. Mary's Hospital. Now, I ask, why should the poorer classes be thus encouraged and instructed to look to the wealthier classes for aid in some of the commonest requirements of life? If they were absolutely unable to provide for themselves, the reason would be a strong and intelligible one; but I do not believe that the people are really in such a hopeless state of poverty. . . .

But there is little use in bewailing an evil unless some mode of remedying it can be found. There is not much difficulty in discovering the only remedy applicable to medical charities. No one can seriously think of abolishing those charities; but why should not the working classes be required to contribute towards institutions mainly established for their benefit? Self-supporting dispensaries exist in many places, which afford all requisite

aid to any person subscribing some such small amount as 1d. to 2d. each per week. I have heard that some of the London hospitals have considered the idea of adopting this system, and refusing aid in all minor cases but to their own subscribers. It would not be necessary to render the hospitals self-supporting. Endowments and public contributions would usually enable every hospital or dispensary to give back in medical aid several times the value of what is given in small contributions. The object would be not so much to raise money as to avoid undermining the prudent habits of the people. Non-contributors might still be relieved, but only on the payment of a fine; and, of course, cases of severe accident, illness, or destitution, would still be relieved gratuitously as at present."

Miscellanea.

The Cottage Hospital, Bromyard.—At the first annual meeting of this institution, presided over by the Bishop of Hereford, the committee, in their report, expressed their unqualified satisfaction with the success of the undertaking so far. The list of donors and subscribers rapidly filled; and as for patients, while the hospital, after the first fortnight, was never empty, on several occasions the five beds were found to be insufficient. The simplicity of the domestic arrangements, and the comfort of being within easy reach of relatives and friends, together with the home feeling and an amount of liberty which could not exist in larger hospitals, have continued to make this institution very popular with the patients. The whole income of the hospital for the year reached the sum of 413*l.* 16s. 2d., and the expenditure 388*l.* 15s. 2½d.; but if the hospital is to be maintained in full efficiency, the continued efforts of its supporters will still be needed. The total number of cases treated has been forty, and of those not a few had to undergo severe surgical operations, which have been perfectly successful, and could not have been performed in the homes of the patients. Out of those forty patients only one has died, one only has been discharged incurable, whilst eight have been relieved, and thirty have been cured. Rule No. 8, which requires a small weekly payment from each patient, according to circumstances, has answered well, on the whole.

Free Baths for Derby.—The design for free baths, proposed to be erected by Mr. Bass in the Recreation Ground, have been prepared by Mr. G. Thompson, the borough surveyor. The original idea of a bath or baths upon the banks of the river, similar to those upon the Seine in Paris, has been so far abandoned that the new structure will be entirely independent of the bed of the Derwent, which will only furnish the supply of water and receive the overflow. Two separate enclosures are marked upon the plan which we have inspected, one of which will be devoted to the use of adults, the other (in which the depth will be properly regulated) for youths. Around] the former, cast-iron dressing-closets, fitted with doors, will be provided, whilst open stalls will suffice for the toilet business of the boys. Water will be supplied from a level which is above the influx of Derby sewage, and will be conveyed in pipes of 6 in. diameter to the upper end of the baths, and discharged by a natural overflow at the inferior extremity. Each bath will be 100 ft. long and 50 ft. wide, or nearly double the size of the Corporation Baths in Full-street, which have been found quite unsuited in point of capacity to the thousands of lads who wish to gratify their natural propensity for "taking the water." In external appearance, the building will be plain and substantial.

Erection of a Large Gasometer at Reading.—Considerable alterations and improvements have recently been made at the Reading Gasworks. A large gasometer, on land between the rivers Thames and Kennett, is nearly completed. The whole of the work has been designed by Mr. E. Baker, engineer and manager of the gasworks, and carried out by Messrs. Aird & Son, of Lambeth. The gasometer is 104 ft. in diameter; will rise 44 ft. high, and contain 350,000 cubic feet of gas. 500,000 bricks have been used in the masonry, and 1,500,000 tons of water have been pumped from the Thames' springs in the course of the work. The gasometer is supported by twelve cast-iron columns, 2 ft. 6 in. in diameter, and connected at the top with wrought-iron girders. The columns rest on Yorkshire stones, each weighing 3 tons 15 cwt. Five pumps have been in use during the work, and the principal pump was worked by steam. This pump was used in the construction of the Thames Embankment, and will throw up 8,000 tons of water per day.

Mexico.—The *New York Times* has advices from Santa Fee stating that Governor Arny, the special Indian agent for that territory, has found the Canon de Chelly, which was explored for twenty miles. The party found walls towering perpendicularly to an altitude of from 1,000 ft. to 2,000 ft., the rock strata being as perfect as if laid by the skilled hands of masons, and entirely symmetrical. There were found deserted ruins of ancient Aztec cities, many of which bear the evidences of having been populous to the extent of many thousands of inhabitants. In each place there remained in a state of good preservation a house of stone, about 20 ft. square, containing one bare and gloomy room, and a single human skeleton. A close examination of many of the ruins proved that the builders must have been skilled in the manufacture and use of edged tools, masonry, and other mechanical arts. Some of the ruins are reported to be stone buildings, seven and eight stories in height, being reached by ladders planted against the walls. Round houses, 20 ft. in diameter, built in the most substantial manner, of cut stone, and plastered inside, were also found in excellent preservation. We want better information.

The Newbury Town Sewage Question. The members of the Local Board of Health have met to receive the report of a committee appointed to consider the desirability of purchasing twenty-four acres of land at Greenham, as a site for the disposal of the town sewage. The report of the committee stated that the land is eligible as to situation, if other things be favourable; that although parts of it lie low, and are at times overflowed with water, other parts of it are sufficiently high for any works that may be required. Under all the circumstances, they recommended the favourable consideration of the Board of Health to the purchase of this land. Alderman Hickman said that, looking at the boggy state of the land, it would require draining thoroughly in order to make it suitable for the purpose contemplated. It was finally resolved that the land be purchased for 700*l.* If drained, perhaps the boggy basis of the land may itself be advantageous as an improved deodoriser of the sewage.

Enlargement of the Birmingham Infirmary Buildings.—A report from Mr. Martin, architect, Birmingham, has been laid before the Executive Committee of the Infirmary, and is to be submitted to a general meeting of governors next month. Mr. Martin's estimate of the probable cost of the alterations he recommends is in blank spaces in the published form of the report. The alterations and improvements comprise proper accommodation for the treatment of out-patients; day and sleeping accommodation for nurses and servants; concentration of wash-house and laundry departments, and their removal from within the building; removal of dead-house and *post-mortem* room from close proximity to the wards; partial isolation of the water-closets, lavatories, and bath-rooms from the wards; and re-arrangement of the officers' rooms, and minor alterations.

The Albert Embankment.—Last week, by the direction of the Metropolitan Board of Works, the first step towards planting and decorating the Albert Embankment was put in hand, and the works will be pushed forward so as to bring them to a finish before the setting in of winter. Plane-trees will be planted on the embankment at a distance of 30 ft. Two large open spaces will be planted with shrubs and enclosed with handsome iron railings. One of the open spaces, near St. Thomas's Hospital, will not be enclosed, as it is intended to devote it to the purposes of a play and recreation ground for children. A new steamboat-pier will be constructed on the site of old Lambeth Stairs, the contract for which has just been let to contractors for the sum of 2,500*l.*

Chairmanship of the Metropolitan Board of Works. — The special committee have reported, advising that the salary of the chairman be fixed at 1,500*l.* a year; that in the opinion of the committee it is not desirable at the present time that the appointment to the office of chairman of the Board should be a permanent one; and that the chairman of the Board be elected for the period of one year. Mr. Collinson, on the bringing up of the report of the special committee, will move as an amendment, "That the Board do proceed to the election of a chairman, under the 49th section of the 'Local Management Act.'"

Fever in Manchester.—Fever, of the same type as that which prevails in Liverpool, is rapidly spreading amongst the poorer classes of Manchester. It was stated on Thursday, the 20th, by Mr. Leppoc, at the weekly meeting of the Board of Guardians, that on Sunday there were 180 cases, on Monday 183, on Tuesday 188, and on Wednesday several more cases had been added to the list. Various suggestions have been made with the view to check the spread of the fever, which is expected to be specially aggravated by the recent floods in the Irwell. The Board decided, after a discussion that the Sanitary Committee of the Corporation and the Sanitary Association of the city be invited to a conference, so that steps may be immediately taken to confine the spread of the disease.

Gloucester Cathedral Restoration.—Six of the statues by Mr. Redfern, of London, have been placed in position on the south front of the cathedral porch. The two central figures are those of SS. Peter and Paul, one bearing the keys, the other the sword; on the right are the evangelists Matthew and Mark; on the left Luke and John. The emblems of the evangelists and of the apostles will be carved on the pedestals on which the statues rest. The statues of the Four Doctors of the Church will be placed in other niches; large statues, one of King Osric the other of Abbot Serlo, will be erected on either side of the porch; and hereafter, we understand, a figure of the Saviour will be placed over the inner entrance to the cathedral.

The Institution of Civil Engineers.—A new list of the members of this society, corrected to the 1st inst., has just been published, from which it appears that at the date referred to there were on the register 16 honorary members, 699 members, 994 associates, and 176 students, making a total of 1,885 of all classes. In the last quarter three members and five associates have been removed by death, and one student has resigned. Mr. Willian Alexander Provis, who was elected a member of this Institution, on the 6th of April, 1819, and whose decease occurred on the 29th ult., has, by his will, bequeathed the sum of 500*l.* to the Benevolent Fund of the Institution.

Monumental.—A Sicilian marble monument to the memory of the late Dr. Kennion, has lately been erected in the burial-ground of Christ Church, High Harrogate. The designer and executor was Mr. J. Adams-Acton, sculptor. The monument takes the form of a broken column, with drapery, with a medallion portrait of the deceased, under which is the inscription. The whole monument stands about 16 ft. high, upon a block of marble, and three blocks of red and white Pateley marble of various dimensions. The place of its erection is the front of the church, and it is a conspicuous monument in the churchyard.

Exhibition for the Relief of Destitute Widows and Orphans of German Soldiers. Arrangements have been made to keep open this exhibition till November 5th. The eight works executed and contributed by H. R. H. the Crown Princess of Prussia and H. R. H. Princess Louise continue to attract visitors. A first instalment of 1,000*l.* from the proceeds of the exhibition and the subscription-list connected with it has already been forwarded to the Crown Princess of Prussia, who has undertaken to superintend its distribution.

St. Saviour's Church, Southwark.—Some months ago one of the pinnacles of the tower of St. Saviour's Church, Southwark, was broken during a thunderstorm, and the appearance of the edifice much injured. Other parts of the church were also in great want of repair. The Warden has given orders that the edifice is to be put in repair, and the work has been commenced under a contract entered into with Mr. Downs, a well-known builder in the locality.

The Value of Paris.—The *Economist* estimates the value of Paris as follows:—

Value of buildings	£154,350,000
Value of furniture and other contents of dwellings	77,175,000
Value of stock-in-trade	77,175,000
Total	£308,700,000

This may be taken as the minimum value of private property in Paris destructible in a siege.

Luton Surveyor.—The new surveyor, appointed by the Local Board of Health, in the place of Mr. Nicholson, resigned, is Mr. John Hillman, a son of the sub-contractor employed in constructing the local branch of the Great Northern Railway.

Inauguration of a Workmen's Institute in Great Wyrley.—A Working Men's Institute has been established and opened at Great Wyrley, in the Wolverhampton district, for the use of the residents in that and the adjoining township. The new building has been erected close by the high road leading from Cannock to Walsall. It has been designed and built by Mr. Greensill, and the cost is 200*l.*, the fittings and boundary wall requiring 50*l.* more. Towards this 207*l.* have already been promised.

South Kensington Examinations. — A competitor for the gold medal for architectural design complains that an inferior design was preferred to his, and, further, that his plans and sections, necessary for the understanding of his design, were not exhibited. His own statement, however, is scarely sufficient evidence.

Housemaids' Knees.—India-rubber sponge can be purchased in sheets, and of any desired thickness. If worn as an apron, or even as small knee-caps or pads, it will be found exceedingly soft, warm, non-conductive of cold or damp, and very durable.—R. T.

TENDERS.

For repairs and other works to Swan Hotel, brewery, and premises, at Blackwater, Hants. Mr. E. J. Reynolds, architect:—

Martin, Wells, & Co.	£386 0 0
Catchpool	321 10 0
Searle	283 4 0

For house and two cottages, Hanley, for Mr. William Harding. Messrs. R. Scrivener & Son, architects:—

Clewes	£1,430 0 0
Bailey	1,418 0 0
Collis & Hudson	1,380 0 0
Harvey	1,320 0 0
Bennett & Cooke	1,305 0 0
Barlow (accepted)	1,230 0 0

For five cottages, Swindon, for Mr. E. Lawrence. Messrs. Lansdown & Shopland, architects:—

Harris	£1,055 0 0
Newcombe	1,000 0 0
Joyce	980 18 4½
Foreshaw	877 15 0
Turvey	850 0 0
Dover	850 0 0

For mill and farm buildings at Somerford Keynes, Wilts. Messrs. Lansdown & Shopland, architects:—

Dover & Dower	£1,268 0 0
Smith	1,133 9 3
King & Godwin	1,132 0 0
Hinton	1,130 0 0
Newcombe	1,070 0 0
Jones (accepted)	862 10 0

For villa residence at Swindon. Messrs. Lansdown & Shopland, architects:—

Newcombe	£1,150 0 0
Dover	1,100 0 0
Barrett (accepted)	1,099 0 0

For New chapel at Swindon, Wilts. Messrs. Lansdown & Shopland, architects:—

	Original Tenders.	Reduced Tenders.
Dyer	£1,030 0 0	—
Dover & Co.	999 0 0	—
Harris	954 7 6	£795 0 0
Smith	948 17 11	797 0 0
Newcombe	900 0 0	750 0 0
J. Dover*	850 0 0	710 0 0

* Accepted.

For new parochial schools at Ashton Keynes, Wilts. Messrs. Lansdown, architects:—

	Tenders No. 1.	Tenders No. 2.
Jones	£1,411 0 0	£1,146 0 0
Tilling	1,274 5 0	1,112 7 0
Weeks	1,250 10 0	1,130 10 0
King & Godwin	1,225 0 0	1,165 0 0
Newcombe	1,200 0 0	1,050 0 0
Dover & Dower	1,199 0 0	1,109 0 0
Smith	1,119 13 7	—
Hinton*	1,143 18 0	1,032 18 0

* Accepted.

For addition to house, near Windsor. Mr. C. H. Howell, architect. Quantities by Mr. J. Scott and Messrs. Widnell & Trollope:—

Thorne	£6,723 0 0
Kempsall	5,536 0 0
I'Anson	5,514 0 0
Higgs	5,443 0 0
Holland & Hannen	5,287 0 0

For labour-shed and dead-house, Ratcliff Workhouse, for the Guardians of the Stepney Union. Messrs. Arthur & C. Harston, architects:—

Hopewell (accepted)	£229 0 0

For Primitive Methodist chapel and preacher's residence, King-street, Margate. Mr. Alfred W. Phillips, architect. Quantities not supplied:—

Wigmore (Walham-green, S.W.)	£1,649 10 0
Garner (Margate)	1,580 0 0
Hall (Brighton)	1,370 0 0
Paramor (Margate)	1,350 0 0
Osborn (Ramsgate)	1,098 0 0

For the erection of two houses at Wimbledon, for the Right Hon. Earl Spencer, K.G. Messrs. Beeston, Son, & Brereton, architects. Quantities by Mr. Barnett:—

Myers & Son	£3,167 0 0
Parsons & Townsend	3,268 0 0
Perry & Co.	3,205 0 0
Avis & Co.	2,904 0 0
Adamson & Son	2,875 0 0
Easton, Brothers	3,496 0 0
Bracher & Son	3,016 0 0

For the execution of certain work in the erection of six houses at Wylde-green, near Birmingham, for Mrs. Rowley, exclusive of sundry items. Mr. W. T. Foulkes, architect. Quantities by Mr. W. R. Green:—

Street	£4,138 0 0
Horsleys	3,533 0 0
Briley	3,499 0 0
Nadens	3,400 0 0
Parkers	3,337 9 0
Ravenscroft	3,289 0 0
Preece	3,250 0 0
Stafford & Brown	3,200 0 0
Surman	3,149 0 0
Steel (accepted)	3,140 0 0

For the erection of twenty-one villa residences in Nottingham. Messrs. Thos. C. Hine & Son, architects:—

Dennett & Co.	£14,122 0 0
Lynam	13,749 0 0
Fish	13,590 0 0
Measom	13,571 0 0
Wars	13,510 0 0
Johnson	13,300 0 0
Slim	13,137 0 0
Bell & Son	12,925 0 0
Hall	12,890 0 0
Stevenson & Weston	12,816 0 0
Wood & Son	12,553 0 0

For twenty-one almshouses, Burton-on-Trent, for the Feoffees. Mr. Joseph Mitchell, architect. Quantities by Mr. T. T. Green:—

Wade, Brothers	£5,698 0 0
Hunt & Bennett	5,138 0 0
Parker & Son	4,705 0 0
Maddocks	4,686 0 0
Wileman	4,599 0 0
Bowler & Beck	4,580 0 0
Hadfield	4,520 0 0
Upton	4,521 0 0
Smith & Chamberlain	4,445 0 0
Tilly	4,443 0 0
Mason	3,890 0 0
Lowe & Sons (accepted)	3,850 0 0

For house and shop at Hoxton, for Mr. A. Heard. Mr. H. T. Gorden, architect:—

Merrion (accepted)	£280 0 0

For Congregational Church, Croydon:—

Pollard (accepted)	£2,040 0 0

TO CORRESPONDENTS.

A. H.—C. C. H.—A. C.—C. B.—C. & Son.—Sir A. B.—A. H. Gent.—E. B.—C. W. L.—L. & S.—W. S.—J. W. N.—Civis.—E. R.—F. W. M.—T. J. G.—A Manufacturer.—E. R.—Small Bore.—R. W.—P. & C.—G. H.—A. W. P.—R. & Sons.—W. F.—R. C.—Rain-water.—J. W. H.—J. P.—T. G.—Paddington (the consent of the Board as to "Line of Building Frontage" will not deprive adjoining owners of any common law rights they may have, although it would, doubtless, weigh with a jury).—Mrs. S. (we do not remember any account of the village in question).—T. J. H. (some short observations in addition might be useful).—J. H. sen. (doubtful if any legal remedy).—G. E. C. (apply to Secretary, South Kensington Museum).—L. W. R. (next week).

All statements of facts, lists of Tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO SUBSCRIBERS.

The Publisher cannot be responsible for Testimonials *left at the Office in reply to Advertisements, and strongly recommends that* Copies only *should be sent.*

Advertisements cannot be received for the current week's issue later than **THREE** o'clock, p.m., *THURSDAY.*

☞ *NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and* not *to the "Publisher."*

SPECIAL NOTICE.

In consequence of the Reduction in the Newspaper Postage, Subscribers within the United Kingdom will be supplied with The Builder *direct from the Office, at the rate of Nineteen Shillings per annum,* payable in advance.

ADVERTISEMENTS.

In crown 8vo. with 150 Woodcuts, price 10s. 6d. cloth.

A RUDIMENTARY MANUAL of ARCHITECTURE: being a Concise History and Explanation of the principal Styles of European Architecture, Ancient, Mediæval, and Renaissance; with their chief Variations described and illustrated. To which is appended a Glossary of Technical Terms. By THOMAS MITCHELL, Author of "The Stepping-stone to Architecture."

London: LONGMANS, GREEN, & CO. Paternoster-row.

Just Published, price 3s.

THE REPORT of the SEWAGE COMMITTEE of the TOTTENHAM LOCAL BOARD of HEALTH on the DISPOSAL of the SEWAGE of their District. Edited by P. F. MARSHALL, C.E. Surveyor to the Board.

E. & F. N. SPON, 48, Charing-cross.

CONTINUATION of DR. PERCY'S WORK on METALLURGY. Now ready, with numerous Illustrations, 8vo. 30s.

THE METALLURGY of LEAD, including Desilverisation and Cupellation. By JOHN PERCY, M.D. F.R.S. Lecturer on Metallurgy at the Royal School of Mines.

To be followed by—

Vol. IV.—GOLD, SILVER, and MERCURY.
Vol. V.—PLATINUM, TIN, NICKEL, COBALT, ANTIMONY, BISMUTH, ARSENIC, and other Metals.

JOHN MURRAY, Albemarle-street.

THE ART-JOURNAL for NOVEMBER (price 2s. 6d.) contains the following LINE ENGRAVINGS:—

I. ON THE WAY TO SCHOOL, after E. Davis.
II. CHILDREN OF CHARLES I. after Van Dyck.
III. THE GENIUS OF STEAM, from the Statue by Antonio Rosetti.

Literary Contributions:—The Picture Galleries of Italy, illustrated; Hever Castle, illustrated; Wilhelm Bissen, illustrated; Art-Education in the City of Moscow; the Salisbury Museums, illustrated; Suggestive Illustrations from the Old Masters in Art-Industries, illustrated.

And several other Articles relating to the Fine Arts.

London: VIRTUE & CO. 26, Ivy-lane, Paternoster-row.

PERFECTION in BOOKKEEPING.—BUILDERS and Others desiring a really good system, can have a SET of MODELS for BUILDERS' BOOKS, by DOUBLE ENTRY, to which was awarded the prize offered in "The Builder," No. 1,180, and which has been adopted by many large firms. Also a Modified Arrangement by Single Entry, suitable for small builders.—Address, E. A. 4, St. George's-road, Regent's Park, London.

TURNER & ALLEN,

ART FOUNDERS AND ENGINEERS,

201, UPPER THAMES STREET, LONDON, E.C.

MANUFACTURERS OF

LAMP PILLARS, GAS LAMPS, FOUNTAINS, GATES, RAILING, ETC.

Either Plain or Bronzed, in the Highest Style of Art.

HOT-WATER AND GAS ENGINEERS.

Sole Importers of BARBEZAT'S FRENCH IRONWORK, and Publishers of French and English Books of Design, 2 vols. Price 25s.

SIR CHARLES LYELL'S MANUAL OF GEOLOGY.

Nearly ready, with numerous Woodcuts, Post 8vo.

THE STUDENT'S ELEMENTS OF GEOLOGY.

By SIR CHARLES LYELL, Bart., F.R.S. Author of "Principles of Geology;" "The Antiquity of Man," &c.

JOHN MURRAY, ALBEMARLE STREET.

THE LIFE OF AN ARCHITECT.

Second and Cheaper Edition, with Portrait, and 40 Illustrations, 8vo. 15s.

A MEMOIR OF THE LIFE AND WORKS OF THE LATE SIR CHARLES BARRY, R.A. ARCHITECT OF THE HOUSES OF PARLIAMENT, &c.

By his Son, ALFRED BARRY, D.D. Principal of King's College, London.

LIST OF SOME OF THE ILLUSTRATIONS.

Portrait of Sir Charles Barry.
The Travellers' Club.
Reform Club.
Bridgewater House.
Halifax Town Hall.
College of Surgeons.
Walton House.
Highclere House.
Board of Trade.
Trentham Hall.
Shrubland Park and Gardens.
Cliefden House.
Birmingham Grammar School.
Canford Manor.
Gawthorpe Hall.
New Palace of Westminster.
Victoria Tower.
Clumber House.
Crystal Palace.
Pall-mall Continuation.
New Palace Yard.
Westminster Improvements.

"The memoir is something more than a mere record of professional labours, with their accompanying struggles, successes, and failures. It is a thoroughly attractive history of a man of strongly-marked individual character, battling with the realities of life, and winning successes as striking as were the drawbacks which accompanied them."—*Pall Mall Gazette.*

JOHN MURRAY, ALBEMARLE STREET.

DOULTON & CO.

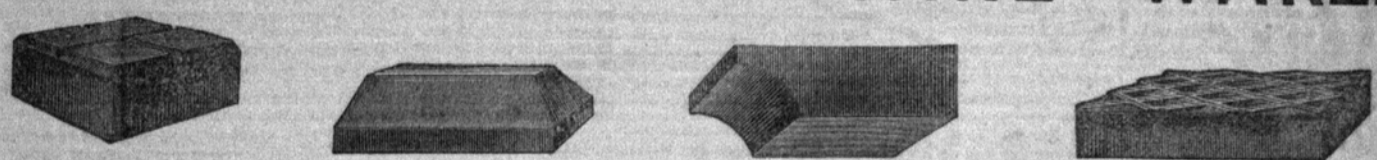
HAVING EXTENSIVE WORKS IN

LAMBETH, the MIDLAND DISTRICT, and the NORTH, can ECONOMISE the Cost of Carriage,

And are thus able to Supply their various Manufactures at the Lowest possible Prices

In any Part of the Kingdom; and can also export from London, Liverpool, or Gloucester.

BLUE STAFFORDSHIRE WARE.



THESE GOODS MAY BE CONSIGNED

DIRECT to ANY PART of the COUNTRY, put into BOATS at the WORKS at Rowley, or into TRUCKS at the RAILWAY STATIONS adjoining.

MAY BE HAD IN LONDON, at their WHARFS at

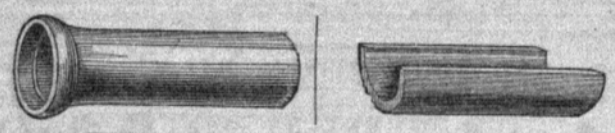
LAMBETH, OR CROWN WHARF, VICTORIA PARK, E.

Or may be sent by Rail direct to ST. PANCRAS, CAMDEN, or PADDINGTON STATIONS; also at

GRANVILLE WHARF, BIRMINGHAM; and SOHO STREET, LIVERPOOL.

DOULTON'S STONEWARE PIPES.

PIPES FOR DRAINAGE,
From 2 in. to 30 in. in diameter.



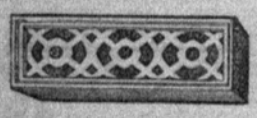
CARRIERS FOR SEWAGE, &c.
With or without Sockets.

DOULTON'S ARCHITECTURAL TERRA COTTA.

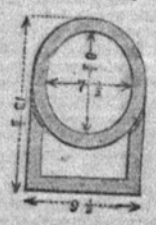
Messrs. DOULTON & CO. are now paying special attention to this branch of their Manufacture, and invite Architects and Builders to view their STOCK at LAMBETH. Specimens also on view at the Crystal Palace; and at the Architectural Museum, Conduit-street, W.

TERRA-COTTA of EVERY KIND MANUFACTURED by DOULTON & CO.

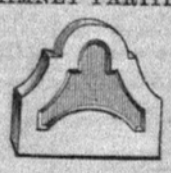
AIR BRICK.



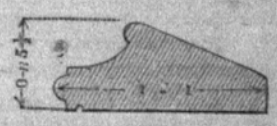
COMBINED SMOKE AND AIR FLUE.



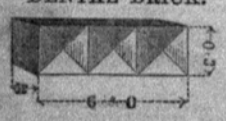
CHIMNEY PARTITION.



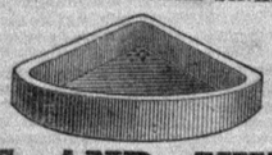
WALL COPINGS.

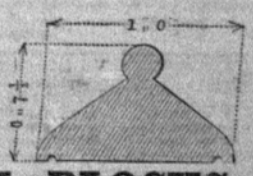


DENTAL BRICK.



STONEWARE SINK.





DOULTON'S PATENT INVERT AND JUNCTION BLOCKS,

And IMPROVED STREET and YARD GULLIES.

DUTCH TILES; RED, BLUE, and BUFF PAVING TILES; AIR BRICKS; DAMP PROOF COURSE, &c.

STONEWARE SINKS, highly Glazed, of great Strength, Incorrosive and Non-absorbent.

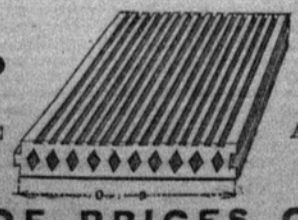
ALL KINDS OF SANITARY WARE.

Fire-clay Goods of all kinds. Plumbago and other Crucibles.

All descriptions of GENERAL STONEWARE, CHEMICAL APPARATUS, FILTERS, AIR-TIGHT JARS, BOTTLES, &c. for Exportation.

DOULTON'S

IMPROVED DAMP



PROOF COURSE.

SEE SEPARATE ADVERTISEMENT.

SEPARATE LISTS OF PRICES ON APPLICATION.

HISTORY CONDENSED.
Complete, with Index, 4 vols. 8vo 42s. strongly bound,
A HISTORY of MODERN EUROPE; from the Taking of Constantinople by the Turks to the Close of the War in the Crimea, 1453-1857.
By THOS. H. DYER, LL.D.
Author of the "History of the City of Rome," "The Ruins of Pompeii," "The Kings of Rome," &c.
"Mr. Dyer's 'History of Modern Europe' is the only good work of its kind extant in English. The work was a difficult one, from the vast wealth of matter to tell and the constant temptation to dwell at dispreportionate length upon certain passages, as well as generally upon the affairs of England, but he has arranged and proportioned his narrative admirably well; it is really of Europe that he tells the Modern History. His style is clear and close, and the work has a thoroughly good index."—*Examiner.*
JOHN MURRAY, Albemarle-street.

FAIRBAIRN ON IRON AND STEEL.
Third edition, revised and improved, price 10s. 6d.
IRON: its History, Properties, and Processes of Manufacture.
By Sir WILLIAM FAIRBAIRN, Bart. C.E. LL.D. &c.
With numerous Illustrations.
CONTENTS.
1. History.
2. Ores.
3. Fuel.
4. Reduction of Ores.
5. Conversion of Crude into Malleable Iron.
6. Mechanical Operations of the Wrought.
7. The Forge.
8. Mr. Bessemer's Process.
9. Production of Steel.
10. Strength and Properties of Cast and Wrought Iron and Steel.
11. Armour Plates.
12. Chemical Composition of Iron and Steel.
13. Statistics of Iron Trade.
14. Improvements, 1854—1869.
15. Experimental Researches on the Mechanical Properties of Steel.
Edinburgh: A. & C. BLACK. London: LONGMAN & CO.

TEXT-BOOKS OF SCIENCE.
This day is published, in small 8vo. with numerous Figures on Wood, price 3s. 6d. cloth,
ELEMENTS of MECHANISM.
By T. M. GOODEVE, M.A. Lecturer on Applied Mechanics at the Royal School of Mines, and formerly Professor of Natural Philosophy in King's College, London.
Being the First of a New Series of Elementary Works on Mechanical and Physical Science, forming a Series of Text-Books of Science, price 3s. 6d. each, adapted for the use of Artizans and of Students in Public and Other Schools. Edited by Professor Goodeve.
On November 5th, the Second Work of the Series, price 3s. 6d.
METALS: their PROPERTIES and TREATMENT. Including an account of the ordinary Metals, from their occurrence as Ore until they pass into the Workshop of the Turner or Fitter.
By C. L. BLOXAM, Professor of Practical Chemistry in King's College, London.
*** The Prospectus of the Text-Books of Science, with the List of other Works in preparation in the Series, may be had of all Booksellers.
London: LONGMANS, GREEN, & CO. Paternoster-row.

MR. EDWARDS'S WORKS ON WARMING AND VENTILATING.
In royal 8vo. with 149 Illustrations and a Portrait, price 12s.
OUR DOMESTIC FIRE-PLACES.
By FREDERICK EDWARDS, Jun.
New Edition, re-written and enlarged, and adapted for popular reading.
"Bears on every page the mark of careful research, and abounds to such an extent with useful matter that we should desire to see it studied and its contents brought into actual practice by all those who are in any way concerned with the important branch of domestic economy on which it treats."—*Chemical News.*
Works by the same Author, uniform in size.
The VENTILATION of DWELLING-HOUSES and the UTILIZATION of WASTE HEAT from OPEN FIRE-PLACES; with 107 Illustrations. Price 10s. 6d.
SMOKY CHIMNEYS, their CURE and PREVENTION. Fifth Edition, revised; with 40 Illustrations. Price 2s. 6d.
The EXTRAVAGANT USE of FUEL in COOKING OPERATIONS; with an account of Count Rumford's Economical Systems, and numerous Practical Suggestions for their domestic use. With 47 Illustrations. Price 5s.
London: LONGMANS, GREEN, & CO. Paternoster-row.

IMPERIAL FIRE INSURANCE COMPANY, No. 1, Old Broad-street, E.C. and Nos. 16 and 17, Pall-mall, S.W. Instituted 1803.
Capital, 1,600,000*l.* Paid up and invested, 700,000*l.*
Insurances against fire can be effected with this Company on every description of property at moderate rates of premium.
Septennial policies charged only six years' premium.
Prompt and liberal settlement of claims.
The usual commission allowed on foreign and ship insurances.
JAMES HOLLAND, Superintendent.

TO ARCHITECTS.
T. A. RICHARDSON, ARCHITECTURAL ARTIST. PERSPECTIVES in OUTLINE or COLOUR. Drawings prepared from rough sketches, and instructions. Moderate terms. Established eighteen years.—Address, 362, Gray's-inn-road.

PARTNERSHIP.—To AUCTIONEERS SURVEYORS, TIMBER MERCHANTS, or BUILDERS.—WANTED, by an Auctioneer and Estate Agent of many years' standing, with a good connexion in the building trade, an energetic PARTNER, with a capital of 500*l.* None but principals treated with.—Apply by letter only, addressed A. B. care of J. Archer, esq. Solicitor, 15, Finsbury-place south, E.C.

TO PAINTERS, PLUMBERS, AND DECORATORS.
AN active PARTNER, with five or six hundred pounds at command, WANTED, to take the ACTIVE PART in an old-established BUSINESS in the Midland Counties.—For information, address, R. W. FORD (under cover), 10, Copenhagen-street, Islington, London.

TO PARENTS.
AN ARCHITECT in a county town, having a good established practice, requires a PUPIL.—For particulars, apply by letter addressed S. S. at C. H. May's, General Advertising Office, 78, Gracechurch-street, London.

TO PARENTS AND GUARDIANS.
AN ARCHITECT, in the country, has a VACANCY for a PUPIL. Premium not so much an object as having a youth of good education and of respectable family.—Address, A. F. at C. H. May's, General Advertising Office, 78, Gracechurch-street, London.

SURVEYOR and INSPECTOR of NUISANCES.—Notice is hereby Given that the Begnor Local Board will, on SATURDAY, the 12th day of NOVEMBER next, APPOINT a SURVEYOR and INSPECTOR of NUISANCES for their District. The person appointed will be required to prepare plans and specifications of all sea defence and other works that may be required, and superintend the execution of such works, see that the sea defences, gas lamps, and other property of the Board are kept in good repair, inspect the district as Inspector of Nuisances periodically, attend all Board Meetings, and perform all the other duties of Surveyor and Inspector of Nuisances according to the Board's bylaws. The salary will not exceed 100*l.* per annum. Applications from candidates, stating age, salary required, and particulars of former engagements, and enclosing testimonials must be delivered at the office of the Local Board before FIVE p.m. on the said 12th day of NOVEMBER.—By order of the Local Board, FREDERICK ELKINS, Clerk
Begnor, Essex, 22nd October, 1870.

SURVEYORS or DRAUGHTSMEN, expert at Town work, Surveying, Plotting, or Drawing, may state age, experience, and terms in letter to L. M. at Ingram's, 23, King-street, Westminster.

TO CIVIL ENGINEERS.
THE Corporation of Blackburn desire to retain the SERVICES of a CIVIL ENGINEER, competent to undertake the preparation of the needful surveys, plans, details, &c. and to superintend the Construction of the Main Outfall Sewer, and Works connected therewith. Further particulars and information may be had on application to FREDK. SMITH, Esq. Borough Engineer, Blackburn.—Applications must be addressed to CHAS. G. H. BECK, Esq. Town Clerk, Blackburn, on or before SATURDAY, the 12th day of NOVEMBER next.—By order, CHAS. G. H. BECK, Town Clerk.
Town-hall, Blackburn, 19th October, 1870.

WANTED, immediately, a thoroughly practical JOINER'S SHOP FOREMAN. Must be well up in the management of workmen, and a quick draughtsman.—Address, stating salary required and references, to 891, Office of "The Builder."

WANTED, the occasional ASSISTANCE of a GENTLEMAN, competent to DESIGN, and PREPARE WORKING DRAWINGS, Write Specifications, and Measure up Work.—Address, stating description of work lately engaged on, number of years in the profession, and salary required, to A. W. care of Davies & Co. Advertising Agents, Finch lane, Cornhill.

TO GENERAL JOINERS.
WANTED, a steady WORKMAN, to go to South America. He must be a Joiner by trade, and unexceptionable references as to character and ability will be required. Good wages will be given, and a man without a family will be preferred.—For further particulars, apply to SAMUEL WORSSAM & CO. King's-road, Chelsea, S.W.

WANTED, TWO good FRET GLAZIERS. Apply to HEATON, BUTLER, & BAYNE, 14, Garrick-street, Covent Garden.

TO ARCHITECTS.
WANTED, an ENGAGEMENT, as ASSISTANT. Accustomed to prepare finished, working, and detail drawings, specifications, to design, survey, &c. Is well up in construction, and has had the management of an office for some time.—Address, ARCHITECT, Mr. Robertson, 95, Upper-street, Islington.

TO BUILDERS, DECORATORS, AND PUBLIC COMPANIES.
WANTED, a SITUATION, in a Jobbing Shop, as PLUMBER, PAINTER, PAPERHANGER, LEAD and SASH GLAZIER, &c. Can measure up work, and take charge of Jobs. Aged 35. Town or country.—Address, E. H 37, Gilford-street, Kingsland-road, London, N.

WANTED, by an energetic Young Man, aged 22, a SITUATION in a BUILDER'S OFFICE, or any place of trust. Understands thoroughly the routine, measuring and collecting of rents, &c. Six years' good character.—Address, W. T. 31, Radnor-street, Chelsea, S.W.

WANTED, an ENGAGEMENT as SHOP FOREMAN, or Foreman on a Job. A good joiner, willing to fill up his time at bench. Can make out a good plain drawing, and thoroughly accustomed to setting out work from bench. No objection to the country. Wages moderate. Can have first-class references.—Address, W. C. CLARKE, 14, Whitehall-grove, Chelsea, S.W.

TO JOBBING BUILDERS.
WANTED, by an energetic Man, Carpenter and Joiner by trade, a RE-ENGAGEMENT, as a GENERAL JOBBING HAND. Aged 35.—Address, L. P. 14, Cirencester-place, Regent's Park, London, W.

WANTED, by a thoroughly practical Man, an ENGAGEMENT, as CLERK of WORKS or GENERAL FOREMAN. Many years' experience on first-class works.—Address, W. H. Mr. Waghorn, 10, Vinegar-yard, Brydges-street, Covent-garden, W.C.

TO BUILDERS, IRONMONGERS, SMITHS, AND OTHERS.
WANTED, by a good SMITH, a SITUATION or JOB. Well up in all branches of the trade. Good references can be given. Aged 25.—Address, H. S. 26, Markham-street, King's-road, Chelsea.

TO ARCHITECTS, BUILDERS, &c.
WANTED, by a practical Man, a RE-ENGAGEMENT, as CLERK of WORKS or FOREMAN of MASONS. Good references.—Address, A. B. 8, St. James's-terrace, Caledonian-road, N.

TO BUILDERS AND OTHERS.
WANTED, a SITUATION, by a young Man, aged 24, as CARPENTER or JOINER. Used to jobbing. Can make Venetian blinds. Wages not so much an object as constant work. Town or country.—Address, A. B. 47, Westbourne Park-crescent, Paddington.

TO BUILDERS, CONTRACTORS, &c.
WANTED, a SITUATION, as CLERK, by a Young Man. Thoroughly understands bookkeeping and accounts, and is also well acquainted with the timber and iron trades. First-class references from previous employers.—Address, F. H. Post-office, Mortlake, S.W.

TO BUILDERS AND OTHERS.
WANTED, by a thoroughly efficient and energetic Shop Foreman of Joiners, a RE-ENGAGEMENT, either as SHOP or GENERAL FOREMAN. Is a good draughtsman, also accustomed to machinery. Aged 42.—Address, T. E. 30, Sussex-street, Warwick-square, Pimlico.

TO ARCHITECTS AND BUILDERS.
WANTED, by a thoroughly practical Man, a RE-ENGAGEMENT, as CLERK of WORKS or MANAGING FOREMAN. Competent to prepare plans, working, and detail drawings, measure up work, and take out quantities.—Address, M. N. 42, Grafton-road, Kentish-town, N.W.

TO PLUMBERS AND BUILDERS.
WANTED, by the Advertiser, a SITUATION as PLUMBER. No objection to fill up his time with other branches.—Address, Y. Z. No. 4, Park-terrace, Cromwell-road, Brixton-hill.

TO BUILDERS.
WANTED, by a CARPENTER and JOINER, some PIECE-WORK, or Day-work. Can do good bench-work or fixing. Good references if required.—Address, L. W. 60, Lillington-street, Pimlico, S.W.

TO BUILDERS.
WANTED, by an experienced Machinist, a SITUATION. Can work moulding machine and general joiner, sharpen saws, make cutters, &c. Town or country.—Address, E. H. 11, Healey-street, Battersea Park, S.W.

TO STONEWARE POTTERY PROPRIETORS, &c.
WANTED, a RE-ENGAGEMENT, by a Young Man, aged 22. Thoroughly understands the Mixing of Clays and Glazes. Seven years in last engagement. Country preferred.—Address, B. J. H. Office of "The Builder."

TO BUILDERS AND CONTRACTORS.
WANTED, EMPLOYMENT, by a sharp, active, experienced Man, aged 34. Used to Shop, Office, Warehouse, or Church Alterations or Repairs, or General Jobbing Work; or as TIMEKEEPER, &c. Joiner and carpenter by trade. Wages not so much an object.—Address, H. B. 1, Carlton-road, South Globe-road, Mile-end, E.

TO ARCHITECTS AND SURVEYORS.
WANTED, by the Advertiser, a RE-ENGAGEMENT as CLERK of WORKS, or to Take the Management of an Estate, having just finished some extensive works under an eminent architect. First-class references. Joiner by trade.—Address, 350, Office of "The Builder."

TO BUILDERS AND ARCHITECTS.
WANTED, a RE-ENGAGEMENT, as ASSISTANT. Well up in quantities, measuring, book-keeping, tracing, drawing, &c. Good references. Salary moderate. Address, B. B. Herbert House, Mile-end, Portsmouth.

TO ARCHITECTS, &c
WANTED, by an experienced ASSISTANT, an immediate ENGAGEMENT. Can prepare and finish drawings from rough sketches (Classic style), make out details, has some knowledge of Gothic, and can make perspective drawings. Salary moderate.—Address, J. M. C. Mr. Goodi, Ironmonger-street, Stamford, Lincolnshire.

WANTED, by a CARPENTER and JOINER, who understands drawings, CONSTANT EMPLOYMENT, in town or country. Steady. Aged 38.—Apply, by letter, M. 11, Princess-road, Buckingham-gate, S.W.

TO BUILDERS AND DECORATORS.
WANTED, by a respectable young Man, a SITUATION, as DECORATOR, PAINTER, and PAPERHANGER. Can be highly recommended by former employers. No objection to town or country. Wages not so much a consideration as permanency.—Address, R. O. S. 17, Lawrence-street, Cheyne-walk, Chelsea, S.W.

WANTED, an ENGAGEMENT, in London, or the Provinces, by a CIVIL ENGINEER'S and SURVEYOR'S ASSISTANT, age 23, who is well up in town and field surveying, drainage, water and Local Board work. A neat and expeditious draughtsman. Testimonials of the highest character.—Address, E. CLARK, 3, Nevill-road, Stoke Newington.

TO BUILDERS, &c.
WANTED, by a practical CARPENTER and JOINER, a SITUATION as SHOP or WORKING FOREMAN, or Charge of Carpenter's Work on an Estate. Aged 30. Very steady. Wages moderate.—Address, P. W. 9, Notley-street, Canterbury, Kent.

TO BUILDERS AND CONTRACTORS.
WANTED, by a respectable Man, aged 30, a SITUATION as GENERAL FOREMAN, or Foreman of Bricklayers. Good experience in the construction of large buildings. Well up in Gothic work. Good references. Would take Brickwork by the piece.—Address, H. A. 11, Landseer-road, Cottenham-road, Upper Holloway, N.

TO BRICKMAKERS.
WANTED, by a Young Man, a SITUATION as CLERK and FOREMAN in a Brickfield. Can be highly recommended by the firm he is about leaving, where he has been five years.—Address, G. J. 16, Osney-crescent, Camden-road.

WANTED, by a Young Man (aged 21), a SITUATION in a BUILDER'S or SURVEYOR'S office. Can trace plans, take out quantities, is thoroughly up to book-keeping, writes a good hand, and has had practical experience of the building trade. First-class references given. Only moderate salary required.—Address, No. 322, Office of "The Builder."

WANTED, a RE-ENGAGEMENT, as CLERK of WORKS or OUT-DOOR FOREMAN. A practical man. Good references.—Address, CLERK of WORKS, Dr. Evans's House, Dry Hill-park, Tunbridge, Kent.

TO BUILDERS, HOUSE AGENTS, &c.
WANTED, by the Advertiser, a SITUATION as PLUMBER, GLAZIER, PAINTER. Is a good distemperer. Can do papering and lead glazing if required, and understands general repairs of houses.—Address, W. G. 2, King Henry's-walk, Bells Pond-road, London.

TO LONDON BUILDERS.
WANTED, an ENGAGEMENT with the above, as DRAUGHTSMAN, CLERK, &c. Has served articles with an eminent architect and surveyor. Can produce first-rate testimonials for last five years. Salary not so much an object as greater experience in the London building trade.—Address, ASHFORD, 45, St. George's-road, Peckham, S.E.

WANTED, by a competent ASSISTANT, a RE-ENGAGEMENT in the office of an Architect and Surveyor.—Address, M. I. Z. Messrs. S. & T. Gilbert, 4, Copthall-buildings, E.C.

WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN, or as an engagement as Foreman of Works. Experienced in all building branches. Was previously engaged for six years as Foreman of Carpenters and Joiners. Understands setting out, measuring, taking off quantities, estimating and accounts. Wages moderate. Good references.—Address, T. J. Wycombe-road, Marlow, Bucks.

WANTED, by an experienced PLUMBER, EMPLOYMENT, piece-work or otherwise. Good reference can be given.—Address, J. B. 40, Linton-street, New North-road.

TO BUILDERS.
WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN, or to Take Charge of a Job. Carpenter by trade. Town or country. Good reference.—Address, F. R. 15, Denbigh-terrace North, Battersea S.W.

TO ARCHITECTS AND SURVEYORS.
WANTED, a RE-ENGAGEMENT, by an ASSISTANT, who is competent to prepare working, detail, and perspective drawings, well versed in construction, &c. Eight years' and a half experience. Good references.—Address, S. E. 48 Foley-street, Portland-place, W.

TO ARCHITECTS, &c.
WANTED, by the Advertiser (a neat and quick DRAUGHTSMAN), a RE-ENGAGEMENT in an Architect's office, temporary or otherwise.—Address, W. D. care of Mr. Durham, 103, Manor-street, Chelsea, S.W.

TO ARCHITECTS AND BUILDERS.
WANTED, an ENGAGEMENT, temporary or otherwise, by the Advertiser. Is a good draughtsman; well up in details and construction, taking out quantities, measuring up works, estimating, book-keeping, &c. Six years' reference to last employer. Aged 37.—Address, E. A 65, Ernest-street, Albany-street, Regent's Park.

TO BUILDERS, HOUSE DECORATORS, HOUSE AGENTS, &c.
WANTED, by a Young Man, aged 30, a RE-ENGAGEMENT as FOREMAN, or to Take Charge of a Business. Well up in measuring, &c. Good experience in writing, graining, and decorating. First-class testimonials from the West-end. Specimens of workmanship can be shown.—Address, F. S. 20, Caledonia-terrace, King's road, Chelsea.

The Builder.

VOL. XXVIII.—No. 1448.

The War and British Industry.

HAT "history repeats itself," we are forcibly reminded by the appalling incidents occurring at the seat of war, and by the localities in which they have taken place, as viewed by the light of an earlier chapter of French history. The events of to-day recall those of former times; there are important points of difference, doubtless, in the history that is being repeated, but there are also numerous startling coincidences. One hundred and eighty-five years since in this current month of October, the edict of Nantes was revoked, by Louis XIV., who has been variously designated "Most Christian King," "the Great," "the Infamous," "the Cruel," and "the Profligate." The revocation effected a *coup d'état*, in which the best men of France were slaughtered, sent to the galleys, or driven into exile. The monarch of that time lost his head,—he had no heart to lose,—inflicted indescribable suffering, and also entailed incalculable loss upon France, by his unwise, cruel, and despotic action. With this self-sufficient and remorseless tyrant originated the well-known arrogant declaration, "*L'état c'est moi.*" His ruthless misrule made of France a furnace of affliction, a nation of slaves and profligates, a land in which good and free men could not breathe, a paradise for pimps and parasites. It would be ungenerous to dwell upon the points of resemblance between the elements and influences at work at that time and at the present. How startling it is to recall some of the scenes of suffering then,—Sedan, Metz, Strasbourg, Tours, Charenton, all have their names recorded; from each a large contingent of the best sons and daughters of France were hunted forth into exile, driven from their own land, to aid with their skill the people of other nations. Many of the refugees fled to Switzerland, Holland, England, and not a few to Prussia, in which the "Edict of Potsdam" was passed to give them welcome, and to secure for them equal rights and privileges. The Royal House of Prussia includes in its lineage Huguenot refugees, and the Queen of England has also the blood of the hunted French Protestants in her veins. Many of the soldiers in the hosts now invading France may be believed to be the descendants of the Huguenots. Have they returned to France inspired by Nemesis? Surely they have had vengeance enough, and would better honour their noble ancestry by now seeking the inspiration of the God of mercy!

Sedan, what sufferings it endured then, and has had to endure again. It was the birthplace of the great Huguenot Marshal Turenne, whose gigantic statue still stands in its market-place. It was until then the seat of a Protestant University, which was suppressed in the attempt to stamp the Huguenots out of existence and of memory. From Strasbourg have come to England, and have escaped to other lands, many able men. Metz, late a stronghold of French warriors, was a stronghold then of the Huguenot soldiers of the Cross. The United Kingdom, Germany, and other nations owe much to the hunted citizens of Metz, who, generations since, found refuge there. From the De Chenevix family of Metz and Lorraine, and from another Huguenot stock, the De la Tranche family, Richard Chenevix Trench, present Archbishop of Dublin, is a direct lineal descendant. Tours, menaced but not yet devastated, what a blow was inflicted upon its industry, its moral, intellectual, and religious life, by the Revocation. To speak of its industries alone, its 40,000 skilled workers in the silk manufacture were reduced to 4,000; its 8,000 looms were reduced to 100; of its 800 mills and works 730 were closed. Tours received a blow then from the effects of which it has never recovered. Fatal, also, was the effect of the Revocation at Lyons, where, out of 12,000 artizans, 9,000 of the best men and cleverest workmen fled. Charming Charenton! situated near the confluence of the rivers Seine and Marne, a few short months since one of the most lovely localities in the neighbourhood of Paris, or in the world indeed, is now a part of the belt of unsightly desert that surrounds the doomed city. The fiercely unholy Iconoclastic decree that went forth in 1685 respecting Charenton, was a much more barbarous ordinance than the order of 1870, to make waste the borders of the city. Mr. Samuel Smiles, in his interesting work on the Huguenots, thus refers to the doings of the destroyers at Charenton and elsewhere:—"The military *jacquerie* at once began. The very day on which the edict of Revocation was registered, steps were taken to destroy the great Protestant Church at Charenton, near Paris. It had been the work of the celebrated architect Debrosses, and was capable of containing 14,000 persons. In five days it was levelled with the ground. The great temple of Quevilly, near Rouen, of nearly equal size, in which the celebrated minister, Jacques Basnage, preached, was in like manner demolished. At Tours, at Nismes, at Montauban, and all over France, the same scenes were enacted, the mob eagerly joining in the work of demolition with levers and pickaxes. Eight hundred Protestant churches were thus thrown down in a few weeks."

The oppressions of Louis XIV. caused the flight of such of the Huguenots as had the means of escape. Many of these refugees found their way to England, but very few of them ever returned to France. The invasion of France which has resulted from the mistake—to state the matter mildly—of the whilom, or present rulers of the country, has caused a large number of the inhabitants of Paris, and of the provinces, to seek an escape from the horrors of war, and an asylum in neighbouring States. The permanent results, as affecting the industry of the United Kingdom, from the present French exodus, may not be expected to be as extensive or important as those which followed the immigration of the Huguenots. At that time the French were greatly superior to the English, and far ahead of them in various skilled industries.

The refugees, or their descendants, originally established, or greatly improved, some of the most important manufactures prosecuted in the United Kingdom. They introduced the art of paper-making, and erected the first paper-mills of England and Scotland. The descendants of the De Portal family have been for generations, and continue to be, the makers of the paper upon which the Bank of England notes are printed; the Brothers Fourdrinier, descendants of another refugee family, invented the paper-making machine. Crommelin, and others, established the linen manufacture in the North of Ireland. They introduced the silk manufacture at Spitalfields and other places; the fabrication of fancy textile goods at Norwich; the making of felt hats at Wandsworth; of Gobelin tapestry at Fulham; of crystal and glass at Savoy House, near the Strand; of lace and of silk taffetas, and in various departments of skilled industry greatly enriched the nation which gave them an asylum in their time of need. Their descendants have distinguished themselves, and have achieved the highest honours in the departments of legislation and government, of science, literature, theology, law, and finance. They are to be found now in both Houses of Parliament, in the Government of the country, in her Majesty's Privy Council, in deservedly high places everywhere. Names illustrative of this fact crowd upon the mind. Among the peers, Lords Taunton (Labouchere); Eversley (Shaw-Lefevre); Romilly, and other peers directly descended, or connected by blood relationship, with the refugee stock. Again, the names of Hugesson, Layard, Bouverie, Pusey, Du Cane, and many others suggest themselves. In science, there are, or have been, Papin Dollond, Roget, Rigaud, and others. In historical, polite, religious, and general literature, Abaddie, Jortin, Grote, Romaine, Drelincourt, Faber, Marryatt, Chamier, and a host of others. We have, or have had, Delane, and others, on the press; Fonblanque in statistics; Brassey (Brasseur) and Dargan (Dargent), railway makers; Pigou, as maker of gunpowder; Gillott, of steel pens; Courtauld, of silks; and Courage, of beer.

Such an important, varied, and valuable permanent residue is not to be expected from the present flight of the French; but it can scarcely be questioned that it will exercise a lasting influence in this country on some branches of artistic skilled production. The business relations between London and Paris, and England and France, have of late years been very intimate, and the interchange of products very extensive. Many businesses in Paris and elsewhere have been destroyed; many artistic skilled workers, whose products were, for the whole, or the greater part, destined for the London or the English markets, are thrown out of employment, their occupation gone,—for a time at least. There are large houses in the neighbourhood of St. Paul's and Cheapside that depended entirely upon Paris for the supply of certain descriptions of goods. The supply has been entirely stopped and the Paris agencies of these houses have been closed. Inasmuch as many of the French people now in London as involuntary exiles have always hitherto been willing workers, and not mere promenaders of the boulevards, it may be supposed that they are unwilling idlers, and that by the exercise of their industry, ingenuity, and activity, they may be enabled to resume production,—which they are already doing, indeed, to a partial extent,—may form new business connexions, and introduce new branches of industry, or extend and improve those already in operation,—and remain permanently amongst us.

The effect that the war will have upon British trade cannot, of course, be known until after its conclusion; it will probably be to stimulate greatly British industry and to increase production. The disturbing effects of the war are but partially indicated by the last returns of Trade and Navigation, published by the Board of Trade, which only come down to the 31st of August last. Some of the entries in the return are significant and interesting. As regards shipping, and the entries at British ports, the following items appear:—

Entries of Shipping at British Ports in August 1868, 1869, and 1870.

Nationality of Vessels.	Mo. ending Aug. 31, '68. Vessels.	Mo. ending Aug. 31, '69. Vessels.	Mo. ending Aug. 31, '70. Vessels.
Entered.			
Prussian	241	230	60
French	211	212	102
Cleared.			
Prussian	375	277	11
Hanoverian	99	79	1
Mecklenburg	99	73	0
French	377	316	399
Countries whence arrived.			
Entered from.			
Prussia	174	242	182
France	688	733	669
Cleared for.			
Prussia	360	344	10
Hanover	100	103	3
Hanse Towns	234	239	50
France	1,077	1,067	1,433

The imports of wine from France in the month, and in the eight months, ending respectively August 31st last, were in excess for the month, but show a slight decrease for the eight months. The imports from France of silk manufactures and ribbons show a considerable increase upon the month, and upon the eight months. The exports of coal to France, were 228,274 tons for August last, as against 147,053 tons for August, 1868; and, 1,626,114 tons for the first eight months of this year, as against 1,281,382 tons for the same period in 1868. The export of coal to Prussia was 78,655 tons in August, 1868, and 492 tons in August, 1870. As regards the exports of arms and ammunition, the return stops short of the time of the greatest activity. In August, 1868, there were exported 40,509 small arms, and 1,347,816 lb. of gunpowder; and in August, 1870, the smaller number and quantity of 15,999 arms, and 1,274,563 lb. of gunpowder. The exports of horses to France were 47 in August, 1869, and 603 in August, 1870. The exports of railroad iron to Prussia in the first eight months of 1868, were of the value of 36,564*l.*, and in the same period of 1870, 343,431*l.*; the exports of railroad iron to France were for the latter period of the value of 6,388*l.* The returns down to the end of the year, or of the present month indeed, may be expected to indicate much more serious and disastrous disturbance in our commercial relations with the countries, now unhappily diverted from their pursuit of the arts of peace.

FRENCH ENGINEERING BEFORE THE WAR.

The science and the practice of the engineer are receiving daily illustration in the course of the present war. The scientific corps of the army have attained an importance which is not undue, but which is certainly unprecedented. Even that great engineer, captain, and legislator, who commenced his career as a lieutenant of artillery in the regiment of La Fère, never contemplated the dominant importance which his favourite arm was to assume in the combinations of the strategist. Everywhere we see the same lesson. In the field the victory remains to the best ordered and best handled artillery. Courage and even tactical genius count for nothing before superior batteries. The tide of war spreads round the great railway lines, overflowing its banks, like the Nile, but still fed by the steady main stream of communication. The relation between the number of days that a fortress can hold out, and the number and calibre of the siege guns, is becoming more clearly than ever a matter of elementary arithmetic. The opinion laid down by no less eminent an authority than Julius Cæsar, that Fortune tells for much in war, must now be checked and modified by the axiom that Science tells for more.

While the progress of war thus taxes the utmost efforts of human skill, it, in some instances, ruthlessly destroys the noblest public works. At a time when so many of the engineering monuments of France are in danger of being swept away, it is unusually instructive to glance at some of the latest triumphs attained by the civil engineers in that country.

In regarding the historic progress of mechanical skill, it is natural to consider that the most simple inventions are those which we owe to the infancy of science. Moreover, complexity, accompanied, it may be, by striking elegance of arrangement, and giving evidence of patient and exhaustive thought, characterises the greater part of modern improvements in mechanism. But for the primary application of science to practice we must, for the most part, cast our glances back to a period when the human mind, if less full of knowledge than at present, evinced a more perfect mastery over the elements at its command. For the origin of the pendulum, indeed, we can only look back for a comparatively short period of time. But the invention of the pendulum closely accompanied the first sound investigation of the laws of falling bodies. In the same way the invention of the barometer, and the complete mastery of the theory of the pump, accompanied the discovery of the pressure of the atmosphere. A method of raising water, yet more simple than the pump, is associated with the name of Archimedes; and there is no reason to doubt that the problem of the reflexion of light, and the concentration of radiant beams, was practically solved by that great philosopher.

With regard to some of the simple utensils of human art, their origin is lost in obscurity. Some tradition of the earliest use of fire is preserved in the legend of Prometheus; but the form is not such as to make the information which it hides readily intelligible to ourselves. Ancient Semitic history is silent on this grand question; although it refers to the discovery of wine. Among the tools familiar to our hands, while the circular saw is barely a century old, and the ribbon saw not a tenth of that age, the saw itself is of immemorial antiquity. It may be considered that, like the knife, the axe, the arrow-head, and the wedge, it represents a natural subdivision of that series of original sharp flint cutting instruments which we know to have preceded the use of metallic tools. The scissors and the shears, on the contrary, must have been invented after metallurgy had made some advance, and probably after the discovery of iron. The invention of the bellows is probably coeval with that of the forging of metal, and must have preceded any successful attempt at smelting, except in the rudest manner, and from the richest ore. It is not generally known that the wandering tinkers of Italy—men who bear the traces of gipsy blood—make use of a form of bellows entirely different from that common to the Northern European nations. The gipsy bellows consists of a pair of bags of skin, which are closed by two straight pieces of wood. A loop on each of these bars serves for the insertion of the thumb and finger. A wind bag is worked alternately by each hand; the arm being lifted, and the finger and thumb opened, to admit the air, and then the finger and thumb being brought together, the slit is closed, the arm depressed, and the air is thus forced through a pipe into the fire, now on the right, now on the left of the blower; who squats on the ground between these primitive implements. The "blast and counter blast" of the smith's forge, referred to by the oracle of Amphiaraus as to the discovery of the grave of Orestes, is far more appropriately referrible to this Italic form of bellows than to our Teutonic valved chamber.

If the parent inventions from which all mechanical improvements have sprung are for the most part so ancient and so fruitful, no ordinary degree of merit must attach to any modern discovery which can apply, for the first time in human history, a well-known principle to a well-known want which it is fully competent to supply. A practical step of this nature has been taken by M. Beau de Moulin, an engineer-in-chief of the French Corps of Engineers of Ponts et Chaussées; and we consider it to be one demanding the most serious attention, and deserving the widest fame.

Every engineer and every architect who has had the responsibility of building a large bridge, is aware of the anxiety attendant on the easing and striking of the centres. The need of providing firm reliable points of support on which great weight may be safely brought, but which may be readily moveable at will, is not confined to bridge building. Among the many cases in which it is desirable to resist such a power at command may be mentioned the launching of vessels, and, generally, the dealing with enormous weight. The tendency of our recent practice, in this respect, has been in favour of the use of hydraulic power. This, however, is both costly and cumbrous, and requires an amount of previous preparation which consumes much time, and has interfered with the application of a method, the power obtained by which is no secret.

M. Beau de Moulin has availed himself of one of the well-known properties of sand,—of that mechanical fluidity of its particles, with which we are all familiar in the hour-glass. So simple and so beautiful is the application, that one hears of it for the first time with a positive blush of shame, that it should have been left to our own time undiscovered.

The method to which we refer is the simple and beautiful plan of throwing the bearings of the ribs of a centre upon sand, contained in iron cylinders, from which it is allowed slowly to escape at will.

Each principal is supported upon round props, fitting as pistons into cylinders filled with fine dry sand. These cylinders are of sheet iron, $\frac{1}{10}$ in. thick, 1 ft. high, and 1 ft. in diameter. At 2 in. from the bottom each cylinder is perforated with $\frac{3}{4}$ in. holes, which are stopped by common corks. To ease the centring it is only necessary to remove the corks. The sand immediately flows from each hole, forming a cone outside the cylinder. The formation of this cone arrests the further escape of the sand, and therefore stops the gradual descent of the piston which follows on the escape. As the sand is swept away, the issue recommences, and may be thus continued, or arrested, at will, till the centreing is entirely detached from the masonry. By carefully regulating the issue from the holes, the utmost delicacy of movement may be imparted to the centre. It may be eased at the same moment in each part, or either end of any principal may be made to descend with greater or less rapidity. The inventor, indeed, claims the power of graduating movement by millionths of an inch; and it is not easy to say what is the practical limit of delicacy attainable by the process. Not the slightest shock is caused by a mode of operation which appears to be not only theoretically but practically perfect. The idea would have done honour to the most illustrious name in the history of human science.

The use of this admirable method of replacing the maul of the carpenter, and the wedges of our early bridge builders, was tested on an arch of very unusual proportions. It was desired to construct a bridge over the Seine, in Paris, to connect the Rue du Louvre with the Rue de Rennes. The bridge had to span one of the locks of the Canal de la Monnaie. The springing of the arch, therefore, had to be clear of the canal walls, while the crown was kept down by the necessity of preserving the level of the roadway. The rise of the arch, thus determined, was about one-eighteenth of its span, or 6 ft. 11 in. in 124 ft.

The architectural harmony of the situation demanded that the new bridge should be constructed of stone. With a wise perception of the fact that it would not do to risk experiments in the midst of Paris, M. Vaudray, the engineer, took the precaution of building an experimental arch, before venturing to throw such an unprecedented piece of masonry over the Canal de la Monnaie.

The spot selected for the experiment was the quarry of the plains at Soupes, sixty miles from Paris, on the Bourbonnais Railway. One abutment was formed by the natural face of the rock, the other by a block of masonry, 27 ft. high, 49 ft. deep, and of the same width as the arch,—viz., 12 ft. It was built of rubble masonry, well bonded, and laid in Portland cement mortar, one part of cement to three parts of sand. Its construction occupied twenty days. The arch itself was built of seventy-seven vousoirs of cut stone, the depth of the key stone being 2 ft. 8 in., and the ring gradually increasing in depth to 3 ft. 7 in. at the springing. The beds and joints were carefully dressed and laid in Portland cement mortar, two parts of sand to one of cement. The thickness allowed to each joint was $\frac{3}{4}$ in. The joints next the skewback were not flushed until after the completion of the ring, having been kept open by means of fir wedges.

The arch was allowed to rest for four months on the centreing, which was then eased by allowing the sand to escape from the cylinders. The effect which was produced by the slackening of the centres was watched with the utmost attention. In an hour daylight was perceptible between the soffit of the keystone and the lagging. In two hours the centreing had entirely left the arch. It was then found that the crown had come down 6-10ths of an inch, and that the joints of the skewback on the built abutment side had opened 7-100ths of an inch. After the lapse of three days the arch was observed to have sunk 7-100ths of an inch more. It was then loaded with a weight of 360 tons, disposed over the whole surface of the roadway, an operation which

occupied thirteen days. The crown was brought down by the weight 3-10ths of an inch more.

Since that time nothing has stirred. The arch has been tested by allowing a weight of five tons to fall upon the roadway from a height of 18 in., without causing the slightest injury to the bridge. The triumphant execution of a masonry arch of such unprecedented proportions is a credit to French science and practice. It is unnecessary to insist on the accuracy of workmanship that is requisite for such a structure, or to point out how much the engineer was indebted to the method employed for striking the centres of his arch.

Reports on the great French engineering works have been published under the auspices of the Minister of Agriculture, Commerce, and Public Works. It is to be feared that we have seen the last of these reports that will be issued for a considerable time. An unrivalled collection of models, plans, and specifications, explanatory of bridges, viaducts, reservoirs, docks, and tunnels, illustrates the state and progress of civil engineering in France. It is much to be desired that so good an example should be followed in our own country. The records of our great public works, and the detailed information gained during their progress, should not be left to the enterprise of publishers, or even to the paternal vanity of engineers. The recent public works of London alone, including the Thames Embankment, the main drainage, the river bridges, the metropolitan railways and termini, are such as to entitle Great Britain to an eminent position among engineering nations, and should be recorded with such literary and graphic luxury as befits their historic importance.

The chief works of the Old World during the present quarter of a century are the tunnel under Mont Cenis, and the canal through the Isthmus of Suez. Both these important works owe their origin, if not their entire conduct, to French enterprise. It would be unworthy of the profession of the civil engineer, as carried out in this country, to entertain either jealousy or regret at the great progress which our professional brethren on the Continent have made since the date of the introduction of the railway system into France. Yet it is well that it should be borne in mind how much of this actual advance is due to the impulse, not only intellectual, but financial, of this country. English engineers not only wrought out the railway system in this country, but introduced it on the Continent. Their experience and advice were eagerly sought, and not only so, but the financial support which their names were once accustomed to command, proved to be a *sine qud non* for the start of many of these undertakings, which now form so important a part of the Continental system of communication. In France, indeed, we have been far more fairly dealt with than in other Continental countries. The highly educated and thoroughly organised corps of the engineers of the *Ponts et Chaussées* lost no opportunity of acquainting themselves thoroughly with the best results of our English expenditure. What the civil and mechanical engineers of France have accomplished during the last fifteen years would seem incredible to those who are not practically acquainted with the subject. In the manufacture of iron, the most decided progress has been made. The rails which were supplied from the French *usines* for the Chemin de Fer du Midi were of such a quality that they often snapped beneath the mere weight of the ponderous locomotives that a French house was then beginning to supply. A fitter, with a hammer and a cold chisel, could cut through any one of these rails, with ease, in twenty minutes,—that is to say, an English fitter. And so difficult proved the task of supplying even these inferior rails in adequate quantity, that a number of miles across the Landes of Bordeaux, for which the French factories were under contract to supply the rails, were actually laid with Barlow's rails, sent out from this country, to the great economy of time and increase in durability of way, no less than of safety to the public.

How thoroughly this state of things has been changed it is unnecessary to say. In fact, the only part of the case that now would be thought incredible is the statement of what formerly existed. In other parts of the Continent the normal hunger for English gold has led to frequent applications, down to within a comparatively recent time, for the services of the civil engineers of this country. Too often, however, has the transparency of the device become evident only a little too late, and the men whose opinions were welcomed as oracles while the subscription list was open, were asked by what right they interfered when all the available funds had been ensured.

While rendering a full meed of tribute to the energy, perseverance, and original constructive genius, that have opened a navigable highway from the Mediterranean to the Red Sea, we must not shut our eyes to the fact that the information which has been given to the public as to the actual procedure of the work has always been carefully *filtered*, not to say manipulated. It is necessary to bear this in mind, now that all we have of the undertaking is an account of the tonnage of the vessels that make use of it. But we have been given to understand, from very reliable sources, that the anticipations of Mr. Stephenson as to the deposit of sand in Port Said are fully confirmed. The actual differences of depth between two consecutive soundings, taken a few weeks apart, are so great that we do not like to mention them without being at liberty to publish the details of the surveys. To maintain a line of navigable channel, in place of a deep and commodious basin, is, we are told, the only present idea of the administration; and even this will tax the utmost energies of the dredging apparatus. Of course, this statement will be denied; but that will have little effect on the minds of English readers. We believe that it is strictly correct.

With regard to that other main link in the chain which was intended to connect London with Calcutta, English enterprise has not disdained to compete with the owners of the mules so familiar to the Alpine tourist, for the temporary traffic over Mont Cenis. The snows of the Alps have only occasionally arrested the trains of M. Fell, and he has shown himself able to contend with the minor difficulties of inclination and of traction. But the eyes of all the engineering world will be strained to watch what sort of a junction will be effected by the French and Italian engineers in the bowels of the Alps. Of the seven miles and 1007 yards between Modane and Bardonnèche we were told some time since that the Italian half was completed, and that the Italian engineers were straining their efforts to meet their French *confrères* as far over the frontier,—or rather as far under the frontier,—as possible. The success of the compressed air machinery has been admirable. We confess that we look with more anxiety to the accuracy of the level than to that of the line. Unless the utmost care has been taken, on each face, to take no levels without the precaution of using perfectly *even sets*, disturbance may have been caused by the varying attractive powers of the different strata, which no means exist for checking. When even it is effected, the meeting of the two halves of the tunnel will be one of the most critical and interesting facts in the entire history of civil engineering.

It is melancholy to see how the rapid progress of our professional brothers in France,—a progress that we have had repeated opportunities of watching with our own eyes, since Mr. Locke first went over to teach Frenchmen how Englishmen made railways,—is arrested by the mailed hand of invasion. Not only must progress in civil works be entirely suspended, but maintenance must in many instances become all but impossible. What can now be the traffic over the Mont Cenis? What the sources of income for French railway shareholders? The unexpected, and, to our mind, extremely improvident, readiness with which a new French loan has been grasped in the City, is no offset to the real depreciation of all property in public works in France. Actual destruction of works, although that may be reckoned by millions, not of francs, but of pounds sterling, is not the most serious evil; for the invaders must, for their own service, substantially repair most of the damage caused in order to arrest their march. While any debateable land exists between France under German power, and France under no power at all, havock is likely to be made there. But the sudden check to the whole circulation of national and of international traffic is a calamity such as we have never witnessed since the Stephensons first matured the invention that we trusted would peacefully bind together the civilised world in a girdle of iron.

Institution of Surveyors.—The first ordinary general meeting of the session will be held on Monday, November 14th, when the president, Mr. Richard Hall, will open the session with an address.

END OF "THE ARCHITECTURAL EXHIBITION."

The "Architectural Exhibition" is no more: it died a natural death, hastened by neglect, on Monday night last. The profession for a number of years has been gradually supporting it less and less, and although the council have been endeavouring each year to improve the condition of matters, it was thought at last that it was of no use struggling on any longer. A public meeting was therefore called, that the subscribers should decide as to whether the Exhibition should go on or not, and such was the interest taken in it by the profession, that not a single person attended besides the members of the council; it was therefore decided to stop. The two facts that increased space is promised by the Royal Academy, and that there are to be annual exhibitions of architectural drawings at South Kensington, have doubtless tended to bring about this result. We make the announcement with regret. Although not always particularly well managed, the Exhibition has done much good service in its time.

In the first year of its existence the late Sir Robert Peel, then at the head of the Government, paid a visit to the Exhibition; and while admiring a design for an ornamental brick building, asked one of the honorary secretaries the reason why such structures should not be erected. The secretary took great pains to explain to Sir Robert that it was entirely owing to the duty on bricks, and that if this were taken off we should get them better and, of course, much cheaper, and so we should soon have better buildings. The next session the brick duty was abolished, and it is a tradition in the Society that this conversation had something to do with the abolition. The good that has resulted from that measure, by the way, is, up to this time, very much less than was fairly expected.

We may have something further to say of the late "Architectural Exhibition."

WINTER EXHIBITION IN THE FRENCH GALLERY.

The French Gallery, No. 120, Pall-mall, is well known to all lovers of pictures, from the central convenience of its site, the comfort of its appointments, and the usual excellence of its contents. The present winter exhibition contains 211 cabinet pictures, by 142 different artists, English as well as foreign, among whose names rank those of Gerome, Goodall, Burgess, Ansdell, Cooper, Creswick, T. Faed, Le Jeune, Orchardson, and other favourite artists. The good opinion which the first glance at the walls led us to form, has been backed by the public; for in spite of weather the most adverse to vision, the number of pictures sold on the very first day of general admission was particularly large.

The picture which should head the list is one which can hardly be considered as finished. Painted on an absorbent ground, which gives it something the effect of fresco in miniature, it will, no doubt, by-and-by, receive a coat of vehicle that will bring more clearly out its marvellous and conscientious finish. It is (51), "Pifferari," by J. L. Gerome, two Abruzzese peasant men, and a lad, playing their national airs (melody it cannot justly be called), on their pipes. The misty, old-fashioned street in which they stand, looks like that of Rochester, or some equally unmodernised town. The expression of the performers is to the life. Their souls enter into their music, which, in their wanderings in Italy, has a devotional character; as they are accustomed regularly to play before every picture of a saint on the wall. The families who are related to the said saint (whether as proprietors or otherwise) invariably make some return to the Pifferari. The other picture by this artist is no less faithful a national study, (25) "A Bashi Bazouck." With the deference due to such a master of colour, we should suggest that this very striking portrait suffers from the unusually and inexplicably dark tint of the back-ground. The figure itself, with its barbarically rich attire, might have been taken from the walls of Karnak. It is of the veritable Egyptian type, and its deep bronze would have contrasted well with a desert sunset.

Mr. Goodall sends studies from the same climate, so rich with the finest models for the painter, from which he drew the inspiration for his noble figure of Jochebed, in the last Royal Academy Exhibition. He gives us here (12) "A

Coptic Woman"; (40) "Crossing the Desert," where the vast ungainly height of the camel throws the weary rider high up against the sky, and (76) "An Egyptian Shepherd Boy." Each of these pictures is an ethnological study. There is also a tiny gem by the same artist (62) "Cranmer going to the Tower," in which the carefully-drawn figures are painted very much in the tone of colouring used by Rembrandt, though they lack that master's breadth in the masses of shadow.

Mr. Burgess is seeking to appropriate Spain, as Mr. Goodall lingers in Egypt. (95) "A Little Bit of Scandal" is a very effective group of three beautiful Spanish women revelling in some very shocking story—no doubt, the detected misfortune of some intimate friend. The old canon who is coming to share the delight, with folded hands, and "Don't mind me, my daughters," on his face, is in perfect keeping with the scene. No. 195, by the same painter, is a "Portrait of a Spanish Lady," in which her Moorish blood gives richness and freshness to the lips, and shade and velvet to the eyes.

To the "Young Mother," whose attire may also denote a young widow, bending over her sweet sleeping child, is deservedly assigned one of the posts of honour. It is by L. Perrault (184). Another centre picture is "Padre Francisco," by E. Long (138); a heavy and well-fed priest, who has fallen asleep in the sacristy, breviary in hand. His open mouth is suggestive of a deep bass snore. A white-surpliced acolyte is taking the liberty to wake his reverence; in the interest of a woman who is entering the confessional in the adjoining church. One can fancy that the penances imposed by Padre Francisco will not be too severe.

Two pictures that might almost be regarded as companions, from size and number of figures, are the "Arrest of Franz Rakoczy, Second Prince of Hungary," by Julius Benczur (15), and "Charles I. in Vandyck's Studio" (201), by L. Escosura. In the first, the contrast between the dignified attitude of the Prince, and his air of comfort and protection to his wife,—who half throws herself out of bed in terror as armed men burst into the room,—is very good. In the latter, the artist has not caught the sad dignity of Charles Stuart. His under-lip has too much resemblance to Philip IV. of Spain, and the very broad grin on the faces of the courtiers is beyond the limits of Court manners. It is not a wholly satisfactory picture.

Mr. Orchardson's "Taming the Shrew" (47) lingers on the memory. The room, it may be said, is too large and bare; the attitude of Petruchio, or his pupil, too theatrically careless. Still, it must be remembered, he *is* acting. But the Catharina is inimitable—that is to say, if golden-haired blondes *can* go into such a fit of passion as is so truthfully indicated by the twitching fingers, the rosy cheek actually scratched, and the dusty, tumbled dress. A chair overturned on the floor adds its mute witness to the tale of the outburst. It is a very clever picture.

To recover from the fury of the fair shrew, and to escape the burst of tears with which she will break down in two or three minutes, turn to (122) "National Cavalry on the March during the Insurrection in Poland, 1863," by H. Gierymski, where a troop of lancers files across a snowy landscape—a truthful and striking picture. Another snow scene is (156) "Sintram and his Companions," by A. B. Donaldson, who has drunk deep of the mystic wonder of the story. The dreamy look of the fair-haired German boy, and the grim and quaint aspect of his companions, are admirably rendered: the "pilgrim" is more effective than the "little master."

We must not omit to mention (196) "The Sisters," by H. Le Jeune, a very charming pair, very prettily grouped; and "Miss Hardcastle" (211), by J. R. Dicksee, from "She Stoops to Conquer." Such a face is sure to conquer—stoop or no. There is a glow, almost Italian in intensity, and a wild drift of cloud, that would have charmed Turner, in (160) "Tide Drift," by W. J. Roffe. M. J. Morgan's "Coast Guard" (145), and "All True" (106), a sailor spinning some enormous yarn to an admiring and intent circle, have great force of expression and of character. The limpid purity of the atmosphere is given well by Jules Ruinart in (69) "Solitude, Baltic Shore," and (71) "Santa Lucia, Naples." But in the latter he has also given a brilliancy and cleanliness to this ill-odorous fish-market, which is purely imaginary. The blue waters of the bay, and the romantic people of Capri in the distance, are very faithfully given. There is a charming effect of a ray of sunlight on hill and lake in (48) "Easedale Tarn, Westmoreland," by S. R. Percy. The struggle of the green of the vegetation with the stern limestone of the mountains and the reinforcement of the brighter colour by the sunbeam are very happy. We must add a word of greeting for "Little Wasp," by L. Swift; the "Heron and Setter" (35), by R. Ansdell, R.A., in which the wounded bird is gallantly confronting the noble dog; and the "Lurking Foe" (7), by Guido Maffei—a most truthful and lifelike fox—we could fancy it to be the very one which, not a week ago, brought trouble to a Wiltshire parsonage, carrying off fifteen chickens: "And what can we do," said the vicar's wife, "for, of course, we cannot shoot a fox?" "The 14th of February" (65), by G. B. O'Neill, and Faed's *replica*, or first study, "When the Day is done" (70), should also be mentioned.

Our readers will thank us for sending them to spend a very pleasant hour in the French Gallery.

DRAWINGS OF THE HOUSES OF PARLIAMENT.

THE meeting of the Royal Institute of British Architects, to consider the decision of the Law Officers of the Crown as to the ownership of the drawings of the Houses of Parliament, of which we gave notice in our last, was held on Monday evening, the 31st ult., the President in the chair. After some discussion resolutions were passed; but as it was a meeting of members only, we must leave the Institute to make them known. We understand the First Commissioner has offered to submit to the Law Officers a case prepared jointly, if Mr. Barry will agree to abide by the result.

ON THE ELECTRO-DEPOSITION OF COPPER AND BRASS.*

IT is intended in this paper to put forward the present condition of the electro-deposition of copper and brass, with sufficient reference to the history of the subject, to make comparatively recent improvements well understood, but treating the process in a practical manner, and with reference to some improvements and manipulations that are adopted by the author.

Mr. Alfred Smee, in his "Electro-Metallurgy," dated 1851, gives much attention to electro-deposition of copper from acid solutions as well as from neutral salts, and he alludes to potassic cyanide as a menstruum for dissolving the copper, when articles of iron are to be submitted to the coating process. In mentioning the cyanide electro-coppering solution, Mr. Smee does not notice the fact that hydrogen gas is evolved during the deposition of reguline metal. In reference to the electro-deposition of brass, he has a chapter upon the reduction of alloys, in which he states that zinc and copper have been reduced contemporaneously, and their union afterwards effected by heat. Mr. Smee has evidently not been informed of Professor E. Davy's discoveries in 1830 (see "Phil. Trans.," vol. cxxi., pp. 147-164), nor of the labours of M. de Roulz in 1841, nor of Mr. C. V. Walker in 1845. Certain patented inventions, also referring to electro-brassing at this early date, *e. g.* Fontainemoreau's invention, No. 10,282 (A.D. 1844); De la Salzède's process, No. 11,878 (A.D. 1847); Fontaine-moreau's plan, No. 12,523 (A.D. 1849); Russell & Woolrich's discoveries, embodied in No. 12,526 (A.D. 1849); and Steele's patent, No. 13,216 (A.D. 1850).

The point of view, the sphere of thought, and the plane of action from which Mr. Smee was led to regard the electro-deposition of metals, were not favourable to the development and classification of facts that were subsequently recognised. He had only studied in detail neutral and acid solutions, and these, in conjunction with the physical laws common to all substances, led him to believe that the evolution of hydrogen gas was an evidence of the existence of the metal in the non-reguline form. Doubtless his admirable researches in relation to his "chemico-mechanical battery," involving as they did only the employment of acid solutions, tended to confirm his views respecting the influence of the evolution of hydrogen gas (during electro-deposition) upon the metal obtained. At the present time, however, it is well known that there are solutions which will deposit reguline metal during the copious evolution of hydrogen from the cathode; this takes place generally during the electro-deposition of alloys. Many alkaline solutions of single metals also exhibit this peculiarity.

It may be that Mr. Smee's views respecting the evolution of hydrogen from the cathode have unduly biassed him in regard to the theoretical views that he puts forward in his chapter upon alloys. These views will not stand the test of experiment and vigorous examination when alkaline solutions are employed. Considerations respecting "the removal of gas" weighed with him, in conjunction with the laws of the conduction of electric force through various media, in the result that he arrived at respecting the electro-deposition of alloys. This result was that alloys might possibly be electro-deposited without the evolution of hydrogen, and by means of an "intense voltaic current." Now that alloys are electro-deposited commercially in a reguline form, the scientific man of the present day can look back to the enunciations of Smee with great respect, but as incomplete. The ordinary accompaniment of this deposition is a copious evolution of hydrogen gas from the cathode; and, although an intense voltaic arrangement is usually employed, it is partially to compensate for the waste induced by the gas evolved, and to save time in the operation of coating. The author's improvements stop the evolution of hydrogen, and enable the electro-motive power to be reduced to that of a single Smee's cell.

Mr. Smee's views have been prominently put forward, because they present a definite standpoint, and because the general knowledge of the subject may be said to date from his able exposition of the position of the science as it was when his work was written.

If first principles are consulted, it will appear that, in alkaline solutions, the proneness to evolve hydrogen gas during deposition arises from the joint action of two causes, one electrical—classified as such by Mr. Smee,—the other chemical. The electrical cause is the small quantity of metal in solution in comparison to the electric power employed. This cause can be lessened or removed by using a solution that contains a greater percentage of metal than that usually employed. The chemical cause is the disposition of the metal of the alkali to go to the negative pole along with the heavy metal or metals, and thus, by being electro-deposited for an infinitely small space of time in contact with them, decomposing the water, thereby getting oxidised, and setting free the hydrogen as a secondary effect. This cause can be eradicated by providing in excess a decomposable compound radicle that will take a certain amount of combined oxygen with it, to the cathode, and thus, when decomposed, will enable the hydrogen that would otherwise be evolved to be oxidised into water.

In the case of brass, a solution containing the cyanides of the component metals dissolved in excess of potassic cyanide possesses the remarkable property of furnishing the copper and zinc to the cathode in such a form that, during deposition, they unite and form a true alloy. This tendency to form a true alloy is increased by the presence of a salt of ammonium, for, in connexion with copper (especially as cupric ammonide), the gas that would otherwise be given off is replaced by metal, this result being secondary and, in so far, a chemical reaction. It is usually deemed sufficient to charge the solvent solution (the potassic cyanide and ammoniacal salt solution) with brass by electrolysis; but this will be found on trial to evolve gas, and to be only workable by two Grove's cells. The author finds that it is practicably serviceable to add to a solution that is charged with not less than two ounces of brass per gallon, as much of the metallic cyanides as it will take up, and then it will probably take still more of the copper and zinc oxides respectively. Should this treatment not perfectly prevent the evolution of gas, the cupric ammonide is added,—about two or three ounces per gallon. The cupric ammonide may possibly carry the combined oxygen to the cathode; in that case the action may be expressed by the following equation:—

At the cathode before chemical reaction.

$$\left\{ Cu_2O,\ 4NH_3 + 4H_2O \right\} + H_2$$

Cupric Ammonide. Hydrogen.

At the cathode after chemical reaction.

$$= Cu_2 + 4(NH_3) + 5(H_2O)$$

Copper. Ammonia. Water.

* Read before the British Association, Liverpool meeting, Section B.

Malaguti and Sarzeau's formula for cupric ammonide being used. That is to say, before decomposition or chemical reaction takes place, the whole of the cupric ammonide, together with the eliminated hydrogen, goes to the cathode. After the decomposition or chemical reaction has taken place, metallic copper is deposited, ammonia is in solution, and water is formed.

In treating the ordinary cyanide copper solution for the prevention of the evolution of hydrogen, the zinc cyanides and oxides, mentioned in the instance of the brass solution, are left out.

When the evolution of hydrogen gas has been stopped by the means above set forth, a single Smee's cell is sufficient to deposit the alloy; thus showing that an intense voltaic current is not absolutely necessary, but that the process requires a certain condition of solution to give a perfect result.

The author prefers to use a menstruum containing potassic cyanide and neutral ammonium tartrate, in equal parts, and dissolved in five times their weight of water, to dissolve the brass in. This is then treated as explained above, to prevent the evolution of hydrogen. This solution is employed in conjunction with heat, and a single Maynooth cell, or a magneto-electric machine of suitable power. It has been found, with some electro-brassing solutions, difficult to deposit, continuously, a given quality of brass; with this solution the regulation of the proportions of copper and zinc in the alloy is made by altering the heat accordingly. If the solution is kept uniform, as shown by a ready test, it is very easy to deposit a given alloy at all times.

Before entering upon some practical points connected with the electro-deposition of copper and brass, it will be well to remark that acid solutions furnish a spreading deposit matted together, resembling the spreading of mortar by a trowel; whereas alkaline solutions furnish a deposit standing up from the receiving surface at right angles thereto, as the hairs of a brush stand out from the brush itself.

In coating wrought or cast-iron work, it is often desirable to coat with copper prior to electro-brassing: the alkaline bath should be employed above the temperature of the air, sometimes 160° Fahrenheit; this method of working promotes the contact of the coating. The article should be well cleaned, so as to have a metallic appearance, with a pickle of weak sulphuric acid, scrubbed with sharp sand, washed, scrubbed with a portion of the depositing solution, and then placed in the depositing trough. The electrical connexions may then be made, and the coating allowed to form for two hours or more. When a sufficient thickness has been obtained, the article is washed, and dried in hot mahogany sawdust.

The tarnishing of the coating increases its beauty, and does not impair the article, for the tarnish is not corrosive rust like the oxide of iron, but is a protective film. Two hours' coating will protect from rust in ordinary indoor work, but the best protection from rust (and this is serviceable even in damp air) is to give two hours' coating in an alkaline bath, and then let the article remain all night in an ordinary acid sulphate of copper bath; this plan utilises the matted coating as well as the vertical deposit. If desired, a brass coating may be given over the last-mentioned copper coating. By suitable mechanical arrangements, the articles in the acid bath, and the dissolving plates therein may be moved—preferably by a to-and-fro movement—during deposition. This treatment shortens the time of the deposit, and makes it (the deposit) uniform.

The roller which is exhibited was treated in this manner; it now weighs 125 lb., having 20 lb. weight of deposit upon it, the coating being $\frac{3}{16}$ in. thick. The other works show various applications of electro-coppering and electro-brassing. The price of the above-mentioned coatings, when a single Maynooth cell is used, is 2s. 6d. per lb. of metal deposited. When a magneto-electric machine is employed the cost is much reduced, viz., to 1s. 6d. per lb. of metal deposited.

The coating given by means of the improvements introduced by the author is superior to that given by any other known process. These remarks apply to the economy of the question, also to the solidity, perfection, and beauty of the result. In consequence of the non-evolution of hydrogen, the adhesion of the coating to the underneath iron or other metal is insured; also the coating is solid and compact instead of being more or less detached and spongy, as it is when hydrogen gas is allowed to be eliminated.

The ammonium tartrate solution used for electro-brassing, as well as the methods of preventing the evolution of hydrogen during deposition that are mentioned herein, form a part of the subject matter of specifications No. 1,540 (A.D. 1857) and No. 3,930 (A.D. 1868).

The uses to which electro-brassing may be applied have yet to be greatly developed, amongst the rest may be mentioned the prevention of rust, the giving an improved printing surface to type and electrotypes, coating the poles of electro-magnets for the prevention of the "residual charge" therein; covering rams, plungers, piston-rods, rollers, &c., with an adhesive and endurable coating; also lining cylinders, pumps, and iron vessels with copper or brass. The application of the processes that have been described to many purposes of ordinary life, such as railings, architectural ornaments, &c., will exemplify the good results to be obtained by the union of the strength of iron with the beauty of copper or brass.

W. H. Walenn, F.C.S.

WORKMEN'S INTERNATIONAL EXHIBITION.

The Workmen's International Exhibition, at the Agricultural Hall, Islington, and of which her Majesty the Queen was patroness, was closed on Tuesday, by a ceremonial, at which the Right Hon. W. E. Gladstone presided.

The proceedings were commenced by Mr. Paterson, one of the honorary secretaries, who expressed a hope that the union of rank, wealth, and labour by which they had been enabled to carry out this undertaking to a successful issue, so far as its real object was concerned, would in future be the rule and not the exception. The collection, which was about to be dispersed, had been, as an exhibition of works of merit, by workmen, the most successful that had ever been brought before the public. As a school of technical education, he thought such exhibitions could not be prized too highly.

The financial statement showed that there was a deficit of 1,000*l.*, for which it would be necessary to draw upon the guarantors. After various speeches,

Sir Antonio Brady expressed his conviction that the exhibition had been a signal success. As one of the guarantors he must say he had been repaid a hundred times over. He called on them to give a hearty vote of thanks to the Prime Minister who now happily governed this country, and who so worthily presided over the meeting. He complimented Lord Granville for the part he had taken in the foundation of a School of Art in the east-end of London, which was a great step towards technical education for the working man, and he called on the wealthy guilds of the city of London to come forward and contribute liberally from their funds for the reward of those inventors whom the juries had strongly recommended.

Mr. Gladstone then made an address, in the course of which he said,—In an exhibition like this, ladies and gentlemen, we are brought into immediate contact with that serious question,—but, if serious, serious only on account of its magnitude, not on account of its unsatisfactory character,—I mean the relations between this country and foreign lands; and we must all join in the satisfaction with which we have examined the beautiful works that have been sent here by the artizans and the artists of so many European countries, in some cases, like those of Italy and Austria,—countries that but a few years ago seemed to be locked in perpetual and deadly conflict, but have now, as we trust, once and for ever, joined the hands of peace and friendship. Long may they flourish in that career of animated and friendly competition of which we have such samples in this hall! Neither to us nor to foreign countries, ladies and gentlemen, does this free competition bring any subject for fear or apprehension; but it brings many subjects of admonition, of stimulus, and even of warning. It warns those who make an insufficient use of the faculties and facilities with which Providence has gifted them that if they will not turn their gifts to good account they must expect to be distanced by those who make a better use of the benefits of the Almighty. And is not that a very useful warning? If men are lazy, it is well that they should be stimulated. If men are wasteful and careless in production, it is well that they should be made vigilant and economical and thrifty. There is no country that has not, in the benefi-cent designs by which we are governed, allotted to it its own proper share in the business of production. It is sometimes said that it is now too late to hope—too late to carry on our pursuits in isolation from the rest of the world. It is too late, and thank God it is too late; because the intercourse by commerce of different countries makes not the diminution, but the augmentation of industry and employment; not the diminution, but the augmentation of comfort and of wealth; and that means, ladies and gentlemen, something still better than these—it means the simple, the natural result,—namely, that growth of friendship and goodwill which grows up, which springs and increases continually in the course of the transactions of business, and by an unseen and silent, but certain, process, tends to allay the evil passions of mankind, and to bind in harmony and friendship all the nations of the world. And the purpose of such an exhibition as this is to bear its part in that great and noble work; and that part, we believe, has been borne.

Afterwards referring to the belief that the Exhibition of 1862, compared with that of 1851, showed that in many cases ground had been gained upon us by rivals abroad, the Premier said,—Now, ladies and gentlemen, do not think me to be wholly slack and deficient in patriotism if I say I am not sorry for it. But I confess that is the case with me. My belief about the Englishman, the Briton—if I had a word that would conveniently include our Irish friends and subjects I would use it—my belief is, that in this particular the inhabitants of this island have in them the materials of everything that is great in every walk and province of human excellence, but they require a stimulus; they have not, perhaps, as much abstract love of excellence as you may find occasionally in the natives of other countries. Production in this country requires to be stimulated by competition abroad. You must, I think, throw the Englishman on his metal in order that you may come to know what he can do. I will not enter upon any elaborate proof of this apparently broad and sweeping proposition; but those who recollect what was the condition of some of our manufactures at the time when they were petted and coddled by legislative favour compared with what it is now when they have been brought out for years from the hot-house into the open air, and exposed to all the winds and blasts of heaven, will be able perhaps to judge why it is desirable that to you at least as much as any other country this powerful stimulus of competition should be applied. Nor is it only in a sordid and vulgar view that this competition should be regarded. It is the love of beauty perhaps more than of any other kind of excellence that we have to learn from our rivals in other countries; and that love of beauty applied to art cannot but be regarded as an ennobling and elevating power in its operation upon mankind.

On another occasion care must be taken to *start* better. We are afraid it cannot be denied that exhibitors have not derived that advantage from public review of their works and merits that under better arrangements might have been had.

THE "OPERA COMIQUE," WITH ENTRANCE FROM THE STRAND.

We cannot describe the new theatre as in the Strand, because, in truth, it is in Wych-street, and if we give that street or Holywell-street, which it also fronts, as its address, the lessees, Messrs. Leslie, Steele, & Norton, may take objection on the ground that the chief entrance is in the Strand. How this occurs by means of a subterranean passage-way under the houses in the last-named thoroughfare and under the roadway of Holywell-street, now called Booksellers'-row, we have already told our readers, with some other matters about the new theatre that scarcely need repeating. The building occupies a portion of the site originally intended for the Strand Hotel, and fills the vacant space which remained when the Globe Theatre was erected on the area of the quadrangle of old Lyon's Inn. The principal doorway, nearly opposite the Strand Theatre, affords an approach to the stalls and boxes by means of a passage, which, furnished with mirrors, will serve the purpose of a conversation-lobby and "crush-room." There are other entrances from Wych-street and Holywell-street, two of which are of considerable width, and would soon empty the house if occasion should arise. The interior of the theatre presents an

elegant appearance. The whole of the space ordinarily assigned to the pit is devoted to rows of stalls, and above these, at an elevation of not more than 4 ft., are the balcony stalls. The tier above is the dress circle, and the upper boxes and amphitheatre rise beyond. On each tier are four private boxes, varying in size. The decorations are described officially as of the Genoese-Italian school. Over the proscenium is a large painting illustrating the story of Sappho; four segmental panels represent allegorical pictures of Morning, Noon, Evening, and Night; and two female figures, in somewhat uncomfortable position, modelled by Mr. Woodington, support the entablature, which is flanked by clustered columns. The ceiling is slightly domed, and in the centre is a "sun-burner," which brilliantly illuminates the house. Around the upper circle are lunettes filled with paintings emblematic of music, art, and the various sciences. The prevailing colours below are white and gold, relieved with some light tints, and enriched by blue draperies. Accommodation is said to be provided for 1,400 visitors, but this seems to us rather an over-calculation. This will be understood better when the proper seats in the stalls and elsewhere, at present not quite finished, are in their places. Careful design is apparent in many parts of the ornamentation, and the form of the house is calculated to enable the audience to see and hear. A little appearance of weakness is given by the circumstance that the uppermost range of columns carrying the ceiling are not over those below, but stand more forward. It is only in appearance, however: the whole framework of the construction is of iron, and doubtless quite equal to all that is required of it.

The theatre has been constructed from the designs and under the superintendence of Mr. F. H. Fowler, architect, by Mr. M. Reid, builder, Hammersmith. The decorations generally are by Mr. E. W. Bradwell. The work in relief, such as that of the proscenium, ceiling, and box fronts, is of *carton pierre* and *papier mâché*, by Messrs. White & Co. The figure paintings are by Mr. Ballard; and the furniture and upholstery by Messrs. Villars.

The house was opened on Saturday evening last, with Mdlle. Déjazet and artists of her theatre in Paris, the programme being "Un Soir qu'il neigeait;" "Les Près St. Gervais," a two-act comedietta, by M. Victorien Sardou; and, lastly, "Les Forfaits de Pipermans." Dependence is evidently placed on Madlle. Déjazet herself; and certainly when it is remembered that this lady was acting in 1815, her performance is remarkable. The critics of the daily press have, however, displayed an amiable weakness in terming it charming, and praising it in the manner they have done. Wonderfully clever, indeed, it is, but to some minds not agreeable, and, unless we are deceived, the laudations have simply prepared a disappointment for the public, who will look for a joyous schoolboy in the *Prince de Conte*, and find a little old gentleman. We shall be glad if it prove otherwise, but we have a strong conviction that the programme and the company must both be strengthened to attain success.

THE WATER SUPPLY AND DRAINAGE OF CIRENCESTER.

The town of Cirencester has been suffering for the last six months from a severe epidemic of scarlet and typhoid fever. We see, by a report of the sanitary committee, published in the *Wilts and Gloucestershire Standard*, that attention has been directed to the dreadful state of the wells in the town, and that "in every case in which typhoid fever had appeared, the water used by the afflicted families was found to be more or less impure." We see also, by an article in the same paper, that the degree of impurity varies from 38 grains of solid residue to the gallon "down to the dreadful well in Dyer-street, with its 102 grains to the gallon, and its yellowish brown fluid, full of various animal and vegetable organisms, and positively putrid." What can the good people of Cirencester be thinking of, to be content to drink this filthy stuff when they are surrounded on all sides by abundant springs of excellent water?—or have the principles of sanitary science not got down to Cirencester yet?—for we see by the report that some of the speakers seemed to think that impure water has no connexion with disease, even in the face of their own sanitary committee's report. A correspondent, who knows the town well, writes:—

The town has been suffering all the spring and summer from scarlet and typhoid fever. The Professor of Chemistry at the Agricultural College has analysed the water from wells in all parts of the town, and has published a series of letters, showing a most alarming degree of impurity. But as town commissioners *will not* see that there is any connexion between bad water and illness, some of the speakers advocate drainage rather than water supply.

But even supposing that a better system of drainage were adopted, that would only prevent *further* contamination of the wells; it would not remove the impurity of the soil, which is saturated with organic matter. The very site of the town is sodden, and it is useless to sink new wells. We ought to get our water from some of the many excellent springs on all sides of us. It seems absurd, then, that we, who have such abundance of excellent water, should be drinking diluted sewage ourselves, whilst the little that we should require would produce so perceptible an effect upon springs that are yielding millions of gallons daily.

If the inhabitants of Cirencester (pleasant old town that it is) do not take up this question of water supply at once, and resolutely follow it up with better drainage, they can scarcely hope to escape serious results. They have had more than one warning.

ARCHITECTURAL ASSOCIATION.

The opening *Conversazione* of the Association was held at the House in Conduit-street, on Friday, the 28th ult., under the presidency of Mr. T. H. Watson. The reports of the various art classes were read, and the prizes delivered. Afterwards the president, Professor Hayter Lewis, and others, addressed the company. Messrs. Arrowsmith, Gillow, Streeter, and Salviati exhibited some choice displays of goods, and the Museum of Building Appliances was, as usual, open to the visitors.

STATUE OF THE DEAN OF RIPON.

The admirers of Dr. M'Neile, in Liverpool, when he was made Dean of Ripon, subscribed a sum of money, and commissioned Mr. G. G. Adams, the Sculptor, to produce a statue of the reverend Doctor for their town. The statue being finished, it was offered last week to the town council, to be placed in St. George's Hall, and led to a rather unpleasant discussion. Moreover, it seemed the proposal had been made without proper notice, and it was withdrawn for a time.

One of the speakers urged that the statue should be critically inspected as a work of art before it was accepted. We are glad to be able to offer him our assurance that from that point of view no objection whatever is likely to arise. Mr. Adams, as it seems to us, has been particularly successful.

The figure is of heroic size, in Carrara marble, of great pureness. Attired in Doctor's robes, holding a book in one hand, and demonstrating with the other, the figure is dignified, while it suggests the known energy of the individual represented. It is lifelike, and stands well: the bands and robes are exceptionally well wrought, and we may fairly congratulate Mr. Adams on having achieved a fine work.

CAN A JOINER BE A GENTLEMAN?

"'A Journeyman Joiner' who writes under this title must be hard to please. He complains that, engaged to obey directions for hours, he has been expected to spend, say a minute, with his hand touching his hat instead of a chisel or a saw, and that some one wished to spare him the muscular exertion required for knocking twice instead of once at a door."

Some such badinage might fairly be addressed by a friend to the impetuous "J. J."; and, when the sense of humour temporarily extinguished by a not unmanly indignation had reasserted its sway, would probably restore the perception of the relations of things—the true function of humour.

It might, however, seem ungenerous in a stranger to suppose that personal pique has dictated what is, in fact, a condemnation of our social system, and of some points of our national character. We shall probably be none of us eager to apologise for many of the unamiable customs and qualities of which, thanks to an introspection now almost become a national defect, we are for the most part painfully conscious.

The sharp lines dividing our people, allotting them, in the oddest manner, into distinct classes; the reserve and want of social tact, fostered by habits of life, sometimes even by our individual liberty; the infrequency of binding ties based on the better feelings, in which our social strife, called competition, seems necessarily to result: these, and countless other social and personal defects, strike most of us with amusement or—with regret. Carlyle, Mill, and other social philosophers; Thackeray, and a host of social satirists; preachers and others not a few, have not failed to do justice to their genius and insight, and to write and speak of these matters with a calm rebuke, or bitter indignation.

Should then any one,—a man like "J. J." let us say,—deem himself, and such as he, specially victims of the system,—caught in the iron fetters of a fate that takes the life from their aspirations, and makes them doubt as to that

> "All-protecting freedom, which alone
> Sustains the name and dignity of man?"

it would require a rare skill to answer such a question, or even to turn aside the point of it, without using the conventional commonplaces that are the defensive weapons of a comfortable middle-class optimism. Under the influence of a vigorous anger ("one of the passions; he that hath it not hath a maimed soul"), the language of consolation, acquiescence in the inevitable, optimism of any sort, even the argument of the value of self-denial and endurance,—all are dashed aside as almost meaningless.

The only answer of any value seems to lie in the word "Provisional."

We have repeated this word and its sense so often that it ceases at times to appear to us, (what it really is), the most valuable key idea with reference to human affairs. "A pilgrimage," "no continuing city," "states and powers to dissolve," "all the creation of man's wit and will,"—these and other phrases,—till the words, once instinct with life and meaning, are often droning sounds that lull our faculties to sleep. . . . . Feudalism, dead as a system, but lingering as a fact; a new commercial and manufacturing energy; an old society and the throes of new life; wealth, ease, and luxury; hard toil, penury, abject poverty; incapacity, corruption, the want of rich, fine natural qualities in many captains of our industries; a future with which statesmen do not attempt to grapple because the conditions of their problem would change under their eyes: timid back-glances at the past, rapid change and feverish exertion in the present, the future shrouded in heaviest mists. . . . All provisional!

Then, *provisionally*—courtesy? Why not? Why not a change in national manners (courteous customs)? The gay, gallant humour that makes the courtesy of equals—with the deference and reverence accorded to women: should they be suspended till they are demanded? "J. J.'s" awkward word "gentleman" (in its best sense) points to nothing more than such a bearing in a man as the fruit of a courteous soul.

Does not the slowness of some Englishmen lead them to shut their eyes to the fact that ready deference is the essence of courtesy?—that equality simply claimed is not the equality that is won by manliness and grace? Probably many might learn the lesson, and many would willingly show that they have learnt it—if they could; but "J. J." would readily own that he knows people who would have *to make a beginning*.

One cannot help an expression of regret at the "no intelligent man likes to be a drudge," the "distaste for drudgery," that show themselves once or twice in "J. J.'s" letter.

"Who sweeps a room, as for Thy laws, makes it and the action clean."—(*George Herbert.*)

Or Ferdinand of his labours by Prospero's orders,—

> "This my mean task
> Would be as heavy to me as odious, but
> . . . . . quickens what's dead,
> And makes my labours pleasures."

(Surely no craftsman need be at a loss to fill in the blank in a worthy way.)

Few can fairly claim to be critics or censors of others, for desiring as much ease and luxury as they can get. Lord Derby (the present Lord) put this neatly when he said that "we are all too much tarred with the same brush;" we must be either silent or priggish. Literature and history step in, however, with higher standards than local and temporary feelings and customs. The simplicity of life, the union of lofty character with Spartan habits,—perhaps a touch of Stoic grandeur, or even of Mediæval taste for hardships, may once again astonish and benefit our

world, emasculated by comfort, and blindly, "in securing mere existence, losing sight of the aims of life."

If "J. J." states, as he may well do, that this is hardly an answer to his, "Can a Joiner be a Gentleman?" it may be replied that, as such a question is evidently quite unconventional, one must recur temporarily to the simpler ideas underlying our habits and customs, which those habits and customs at once clothe and shroud.

If, in the future;—if, say "J. J.'s" great-grandchildren are to laugh at such a question, implying to them the existence of a society graduated as might be recognised to be fitting in disturbed dreams, instead of sober daylight;—if we are to perform what some deem our great national programme,—to build up a NATION,—high-spirited and gentle and patient, quick-witted, law-respecting,—with social virtues and domestic affections, all developed freely as the best growths of nature;—ruled over by men who have in fuller measure the qualities wished for by the people for themselves, and ruling not over citizens only, but over their minds and hearts;—if . . . it must be through the manhood, the force of character, the intellect,—in a word, the *virtue* of our people.

It is because some of the best of the working classes in England have such a programme in their minds, that so special an interest is now turned on them as a section of the builders-up of our national future. S. F. C.

WHAT IS A GENTLEMAN?

It needs not noble birth, as understood,
Nor ancient lordly life and lineage;
True gentleness depends not on the blood,
Nor is politeness a mere heritage.
Good breeding, gentle manners, honest aims,
Alike in peasant, peer, and artizan,
Need no side-hinging to "illustrious" names,—
Alone these constitute the gentleman.

C. H. C.

SCHOOLS OF ART AND OF SCIENCE.

Central School of Art for Derby.—A circular respecting the Central School of Science, to be held at the Old Grammar School, St. Peter's-churchyard, in connexion with the Science and Art Department of the Committee of Council on Education, at South Kensington, states that the arrangements for the session of 1870-71 include four evening science classes for the study of Theoretical Mechanics, Inorganic Chemistry, Acoustics, Light and Heat, Magnetism and Electricity, under the superintendence of the head-master, Dr. Davis, principal of the Whitworth School of Science, Cheltenham. The terms are one guinea per session, admitting to all or any of the classes, but artisan and industrial students who compete at the Government examination in May will be admitted on payment of 2s. 6d. per term, and there are three terms in the session. A long list of names of prominent and influential citizens is appended to the circular, as forming the committee; the mayor is the patron, and the classes are pressed upon public attention with the weight of many of the most intelligent in Derby.

The Stroud School of Art.—The annual exhibition of the works of the pupils of this school, with some works from the Gloucester school, have taken place in the Corn-hall. The works were of considerable merit, and showed progressive improvement, the number of oil paintings being in much larger proportion than at previous exhibitions. A public meeting was held in the Corn-hall, when the prizes gained by the students, and also by the students in the science classes established in connexion with the Stroud Institute, were distributed. Mr. Dickinson, M.P., presided. There was a crowded attendance. Addresses were delivered, and many prizes, both local and those given by Government, were distributed.

The Gloucester School of Science.—At a preliminary meeting of students and others intending to join the Science Classes this season, Mr. Jeffery explained the objects of the meeting, which were simply to give some account of last year's work, to distribute the result papers to the successful students, and to enrol members for the new classes. It appears that these classes were originally established at the Free Library three years ago as an essential feature in Mr. Jeffery's management of that institution; they were very fairly successful then, and have continued so since. During the last session, 43 students enrolled themselves as members of the various classes. Of these, 25 continued their studies all through the season, and 21 were examined; 82 papers were worked by them, out of which 9 first-class and 40 second-class certificates were obtained. Mr. Jeffery alluded to the important changes likely to take place in the future elementary education in this country, showing, by reference to the papers recently read at the Social Science Congress, and to the meetings recently held in London under the presidency of the Lord Mayor, the strong and growing conviction that the people of this country cannot be sufficiently educated while "the Government instruction and aid are limited to the three Rs of the revised code."

Establishment of Science Classes in Reading.—A meeting has been held in the local Council Chamber for the purpose of establishing science classes in connexion with the Museum of Science and Art at South Kensington, and hearing an address on the subject by Mr. J. C. Buckmaster, of London. A large number of people assembled, and an adjournment to the Town Hall was rendered necessary. The Mayor (Mr. P. Spokes) presided, and a committee was appointed to carry out the objects of the meeting.

Chester School of Science and Art.—An exhibition of drawings connected with this school of art has been open some weeks in the Old Palace. At the close of the exhibition, a *conversazione* was held in the rooms. It was numerously attended by an appreciative audience. The distribution of prizes to the successful students at the examinations in March and May, 1870, was made by the Dean of Chester.

Burslem and Tunstall School of Art.—The first annual meeting of this institution has been held in the Town-hall, Burslem. Mr. James Bateman, M.A., F.H.S., presided, and was supported on the platform by the chief bailiff of Burslem (Mr. F. Tennant), and other gentlemen. There was a very large attendance, notwithstanding unfavourable weather. Mr. Woodall read the report of the committee, of which we give an abstract:—

"The interest with which the erection of the Wedgwood Institute was locally regarded, gave a special impetus to the opening of the schools last October, in the rooms which had been so carefully designed for their accommodation. But while some advantage was derived from this circumstance, the managers had at the same time the disadvantage of having to deal with a collection of students some of whom were merely attracted by the novelty, and soon withdrew, while many who remained had had no previous training. Due weight being given to these considerations, the committee regard their first year's results as eminently satisfactory, since they compare favourably with some of the oldest and most successful schools elsewhere. The committee have no hesitation in attributing these successes mainly to the zealous and intelligent exertions of their head-master and his three assistants, and they commend Mr. Theaker's report to careful consideration. The elementary art classes have been throughout well attended, and now, in the second session of the school, there are very few vacant places. The advanced art school is becoming increasingly interesting and important. The Committee have, however, to confess to a disappointment in that the female evening class is not well attended, although much has been done for its comfort and advancement. In like manner, but in less degree, there is among ladies, whose means and leisure place the morning class within their reach, a surprising indifference to such an advantage. The Committee are aware that the other district schools have had a similar experience, but they hope to see an increased appreciation of the value of such a branch of education amongst those whose mission it is to elevate and refine our every-day life, and whose innate powers are enhanced by the charms of an accurate judgment and a cultivated taste. In the science classes the Committee are satisfied that a good beginning has been made. The necessity for close and persistent application is much greater in this department than in the art section. In those classes under Mr. Theaker's supervision there is obvious progress, and satisfactory results are confidently anticipated from his careful system of teaching."

In conclusion, the committee earnestly ask for a manifestation of greater personal interest and support from those who occupy positions of influence in the district. Mr. Theaker then read his report, in which, after referring to the difficulties with which he had had to contend in organising the school, he stated that,—

"In April last 873 elementary and eighteen advanced works were sent to London in competition for prizes and for examination, in accordance with the minutes of the Department of Science and Art; nine prizes were awarded, a student of the ladies' morning class obtaining one of them; eighteen works were selected for national competition, and eighteen students were honourably mentioned. In geometry, freehand, modelling, and perspective, fifty-three passes were obtained, including twelve prizes and one full second-grade certificate. As free students for one year, four were recommended to the Department, those being all that were eligible, and they were all appointed free students. With regard to the science classes, in those subjects which come under this department,—namely, building construction, machine construction and drawing, solid and plane geometry, &c.,—although there passed at the examination one student in solid and plane geometry, two in plane geometry only, two in building construction, and six in machine drawing, out of those who presented themselves, this was the least satisfactory result in the school. Reasons were given for this conclusion; and then Mr. Theaker reported that, although the designs sent up for competition for the prizes offered by the Plasterers' Company had not been successful, the principal promoter of those prizes thought one of the designs so good and suitable for wall decoration that he had purchased it from the student. He concluded by stating that, on the whole, he had every reason to be abundantly satisfied with the assiduity of the students, the quality of their works, and the results generally of the first year's operations."

The Chairman then distributed the prizes to the successful competitors.

The York School of Art.—The annual meeting of this school has been held in the institution, Minster-yard. Mr. W. C. Worsley, of Hovingham, occupied the chair. The committee's report stated that the average number of pupils in attendance on the several classes during the year has been 94, showing a slight increase on that stated in the last report, when it was 83. The results of the Government examinations are as follow:—In the second grade, 27 passed in free-hand drawing, of whom 9 were marked excellent; geometry, 6, of whom 4 were marked excellent; perspective, 3, of whom 2 were marked excellent; 13 received prizes, and 36 passed the ordinary examination. On comparing these results with those of the preceding year, it will be found that in 1868-69, 29 passed and 5 received prizes; giving, therefore, 8 less as receiving prizes, and 7 less as having passed the examination. The examiners' report in reference to the works sent up to South Kensington says that "the machine drawing from actual measurement was the most thorough in workmanship." A vacancy in the mastership of this school has been filled up by Mr. J. S. Dorring, from the Yarmouth School. The committee urgently appeal to the local public for subscriptions. The chairman, in his address, spoke of the ornamentation of the walls of their houses. A person built a house, he remarked, and found that a bare wall was an ugly thing. There was a want felt, and therefore something was required to ornament the wall. Hence they had a demand for pictures, paper, cornices, and all those things which made their rooms beautiful. This consequently produced a demand for art,—a demand which, in fact, constituted a field of occupation for students in a school of that description. He thought there had been a very great advance in art of that kind within even the memory of young men, but certainly within the present century. If they went back 100 or 150 years, they would find that there then existed a very dull and cold appreciation of art. Take the example of such a street as Harley-street, in London, where there was a long, straight, and dull monotonous range of buildings, with square windows, dull red bricks, and no attempt made at what could be called beautiful. If, however, they went towards the neighbourhood of that magnificent institution in South Kensington, which was so dear to all the lovers of art, they would find that there was an attempt there to erect beautiful buildings. They were cheery, airy buildings, upon which there had been some attempt made at ornamentation. They were not in every case of the highest class, but there they had evidence of a demand for something beautiful in all they did.

TENDERS FOR THE BRIGHTON SEWERS.

At a special meeting of the Sewers Board, on Monday last, after some little mystification, the following list was given of those contractors who had sent tenders:—

1. Messrs. Crabb & Vaughan, Kingsland.
2. Mr. Matthew Jenning, 3, Adelaide-place, London Bridge.
3. Mr. William Webster, 8, St. Martin's-place.
4. Messrs. Hill, Keddell, & Waldram, 38, Kingsland-road.
5. Messrs. Thurst & Co., Chelsea.
6. Mr. Henry Harrison, Great George-street, Westminster.
7. Messrs. Dickenson & Oliver, Camberwell New-road.
8. Messrs. Fernandez & Kershaw, Tunbridge Wells.
9. Mr. Thomas Peason, Kennington Cross.
10. Mr. Wigmore, Fulham.
11. Mr. Fredk. Furniss, Havant.
12. Mr. John T. Chappell, Little George-street, Westminster.
13. Messrs. Hiscox & Williams, Lavender-hill, New Wandsworth.
14. Messrs. John Aird & Sons, Lambeth.
15. Messrs. Cheesman & Co., Brighton.
16. Messrs. Neave & Fry, Mile-end, Portsmouth.
17. Mr. Joseph Phillips, Westminster Chambers.
18. Messrs. W. & J. Pickering, New Bridge-street, Blackfriars.
19. Mr. Geo. Wythes, Buckley Park, Bromley.

It will be noticed that, contrary to customary practice, the amount of the respective tenders is not appended; and, in reply to an inquiry, the Clerk stated that it was not intended that the figures should be made public!

Mr. Cordy Burrows, after explaining that the Board had received nineteen tenders, and that they had had the assistance of Mr. Hawkshaw in

the consideration of them, moved a resolution recommending that the offer of Mr. Matthew Jenning to carry out the works for 66,962*l.*, which was, he said, the lowest tender, should be accepted. He said the contractor was well known to Mr. Bazalgette, the engineer, and others, and expressed his gratification, which he felt would be shared in by the town, that the accepted tender was so much less than had been anticipated.

This having been seconded and carried, the sureties of the contractor for the due performance of the work,—Messrs. James Stiff, High-street, Lambeth; George Smeed, Sittingbourne; and George Loe, 3, Adelaide-place, London,—were approved, and the solicitor was ordered to prepare the necessary agreement and bond.

ERRONEOUS ESTIMATING.

The following list has been sent us of tenders delivered for alterations and additions to Nos. 3 and 5, Buckingham Palace-road, for Mr. John Gooch. Mr. J. Dale, architect. Quantities supplied:—

Barber & Groome	£2,188	0	0
Bellham	1,949	0	0
Richards	1,899	0	0
Shillito	1,830	10	0
J. & C. Whitaker	1,708	0	0
Snowden	1,695	0	0
Perry	1,670	0	0
Cook	1,619	0	0
Parsons & Co.	1,579	0	0
Blackmore & Morley	1,537	0	0
Fanthorpe	1,521	0	0
Baxter	1,449	0	0
Blease	1,443	0	0
Capps & Ritso	1,420	0	0
Lacy	1,400	0	0
G. Cox	1,369	0	0
Luscombe	1,325	0	0
J. Cox	1,245	0	0
Froud	807	10	0
Wagner	800	0	0

The lowest was accepted, and the work is about to be done. It will scarcely be believed that all tendered on the same bill of quantities, but so it was, and this discreditable difference (one builder saying 2,188*l.*, the other 800*l.*), therefore, arises merely through the prices.

Here is another list, not quite so bad, but still preposterous:—

Tenders for the erection of an Odd Fellows' Hall at Shoreham, for the trustees. Mr. Geo. Tupper, architect. Quantities supplied:—

Blaker	£1,173	0	0
Watson	1,045	0	0
Winnett & Brooker	1,021	0	0
Holloway & Son	1,020	0	0
Blackmore	999	0	0
Hall	970	0	0
Smith	960	0	0
Lockyer	909	0	0
Dean	895	0	0
Architect's estimate	890	0	0
Miles	885	0	0
Curd	883	0	0
Stenning	875	0	0
Burstow, S.	864	0	0
Beach & Parish	825	0	0
Chappell	815	0	0
Hammond	777	0	0
Burstow, T.	683	0	0

THE ELECTION OF SCHOOL BOARDS.

The electoral placards, some of them ungrammatical, and the addresses at loose meetings, at vestry halls, and the nominations of candidates who do not pretend to have paid the special attention requisite to the means needed for the efficient education and training of neglected children, have led the Education Committee of the Association for the Promotion of Social Science, to entertain the like apprehensions to those expressed by the Council of the Society of Arts, that if this course be continued and prevail, the new School Board will be an expensive failure.

It should be known on such evidence as that of the Ordinary of Newgate, and experienced school and prison inspectors, that crime has largely recruited its ranks from union workhouse schools, and rate-aided and many State-aided schools, and that this has been unwittingly done by the election of persons as local administrators who have not examined, and do not know, what sort of elementary teaching is indifferent or bad, and what is efficient and good.

It is therefore suggested that the ratepayers should inquire, or get inquiries to be made, of the candidates who have been named, and of those who may yet be named:—(1). Whether they have given any practical attention to the subject, and how long, and what have been their opportunities of observation of the results of different methods of elementary instruction, and of industrial training, and of their efficiency in rendering children fit for service, and their comparative success or failure, and on their expense in time and in money? (2). Whether they are aware of the experience that physical training by bodily exercises must be combined with mental training for a large proportion of the children of the depressed classes, to impart to them the requisite aptitudes for efficient manual labour and industrial service? (3). What is their knowledge of the defects of existing methods, and their grounds of confidence in ascertained means for amending them? (4). Whether their observations have made them aware of the differences in the classes of children to whom it will be necessary to apply different methods, and are prepared to bring them under consideration?

To ascertain the sense of the electors completely, and comparatively inexpensively, the Social Science Committee recommend, where practicable, the adoption of a preliminary test-ballot by papers, distributed from house to house, and collected either by commissionaires, or by post in the method in use by pension societies in the ballots, for candidates upon descriptive lists. The lists issued might present to the electors, besides the names submitted by a Committee of Selection, the names of any other candidates who chose to offer themselves, and might be willing to abide by that method of ascertaining the wish of all the electors.

STATISTICS OF METROPOLITAN GAS SUPPLY.

The accounts for 1869 of the thirteen gas companies by which the metropolis is lighted, have been published, in compliance with the several Gas Acts, and "presented pursuant to Act of Parliament." The authorised capital of the thirteen companies is about ten millions and a half sterling. The largest amounts, as regards authorised capital, are those of the Imperial Gaslight and Coke Company, 2,860,000*l.*, of which 1,153,653*l.* remain to be issued, and called up; and the Gaslight and Coke Company, 2,012,500*l.*, of which 708,464*l.* remain to be called up and paid. The quantity of gas sold to consumers during this year is very nearly, if not quite, 9,000 millions cubic feet, and the aggregate amount received by the companies for public lighting and for lighting by contract, 222,000*l.* The companies have taken during the year about 1,250,000 tons of coal. The price at which four-fifths of the gas are supplied is 4*s.*; the remainder being cannel gas, at 5*s.* 6*d.* per thousand cubic feet, and the supplies by the South Metropolitan Company, at 3*s.* 2*d.* and 3*s.* 4*d.*, and by the Independent Gas Company at 3*s.* 4*d.* The receipts appear to have been ample to enable the companies to pay the maximum dividend of 10 per cent. upon their ordinary stock.

THE MARGATE JETTY JOB.

Sir,—It is difficult to say whether the directors have most astonished the competitors by the alacrity with which they have made their award, or by the extraordinary decision at which they have arrived.

The design selected for the first premium is that signed "Octagon," and is the production of Mr. G. G. Page, of Westminster.

The second premiated design (40*l.*), "Espérance," is that of Mr. Soul, *the clerk to the directors of the company.*

The third premium (25*l.*) was awarded to the design marked "Dolphin," the production of Mr. W. Lane Sear, of Margate.

Four other designs were sent in, and the whole have been submitted to public view at the Droit Office, at Margate, during the last few days.

Conspicuous among the whole for its meagreness, and absence of any claim for admiration on the score of invention or construction, stands the design to which the second premium has been awarded.

Two questions arise:—1st. How comes the *clerk of the company* into the competition at all? 2nd. What are the merits of his designs, *supposing* him to be fairly a competitor?

As to the first question. Not quite two years ago the directors of the Margate Pier Company advertised for *a clerk*, at a salary of 120*l.* per annum, and Mr. Soul was the gentleman selected to fill the vacant office. The circular inviting us to this competition is before me, and is signed "W. McNab Soul, chief clerk."

I learn that there was a leaning in the minds of several of the directors, before the designs were sent in, towards an octagonal form of head to the extension plans (indeed, it was a foregone conclusion with them); and that Mr. Soul and some of the directors met Mr. Page in consultation some few weeks ago upon a draught plan which he then submitted, and advised certain alterations therein, which Mr. Page accordingly made, and with the result of gaining the first premium. Thus Mr. Soul obtained an advantage denied to the other competitors, besides that great advantage which would naturally accrue to him in his position of clerk to the directors, present at all their meetings, and entering into their minds. Moreover, viewing Mr. Soul as the chief clerk of the company, probably more than one of us opened our minds more freely to him than if we had known we were speaking to a competitor.

I think, sir, you and others will agree with me that Mr. Soul was not fairly in the competition.

Now, as to the merits of his design. A plain octagonal head, having sides of 80·0 each, and flanks of 107·6 each, is shown on four small unmounted drawings; viz., a small block plan, one elevation, and two deck plans. No section, no perspective, no dimensions of girders, piles, walings, ties, bolts, bracings, or timbers are given, and not a single sheet, nor even a sketch of details of any kind. A short and very flimsy report accompanies the plans, and all are signed boldly "*Espérance*" in his own handwriting; but it would be rudeness, of course, to suppose that this latter accident was noticed by the directors. All the other designs are by men who can draw, and show sections, construction, and detail. I might point out, dared I trespass, some minor matters that provoke comment; but I dare say you will in all probability be addressed upon the subject by some other

Competitor.

[Seven sets of designs were sent in, including some by Messrs. Moreland, Cubitt, Whittaker, and others.]

LOOK TO THE COIN DEPOSITS.

A singular theft, it is said, but more plural than singular, we fear, has just been brought to light at Plymouth. On July 28th last the foundation stone of the new guildhall, about to be erected in the town, was laid with great public and municipal *éclat*. Since that time to the present the work of erection has been going on at a part of the site some distance from the foundation stone, which, in consequence, has remained as it was laid, untouched and unbuilt upon. As one of the contractors for the building was surveying the work, he noticed that the foundation stone bore evidence of having been displaced from its socket. This aroused his suspicions as to the coins deposited, and, in order to satisfy himself, he told the men to raise the block. It took four men to do so, the stone being 2 tons in weight. It was then found that every coin had been carried off. As yet no clue has been obtained to the thieves, who must have numbered at least four or five men. Better deposit no coins than leave a distant posterity to suppose us a race of thieves. We have urged care in first stone-laying for years.

OFF STREETS AND OPEN SPACES.

Sir,—How neglected they are! Scavengers never apply their art there. Why, I am unable to fathom. Rates are paid by all parishioners for cleaning the *whole* parish. If private spots abound, let them be gated or walled up, not remain an open depository for pestilential offal, garbage, ancient fruit, fish-shop clearings, oyster-shells, flock, straw, defunct grimalkins, and house-repairers' rubbish. The effluvium from the greenish puddles is nauseous; though, thanks to the boys, the place is ozoned by an occasional bonfire. It is a "Tom Tiddler's ground" to them. If a building exists here it generally is of a very poor order, viz., a cordwainer's manse, a woodchopper's castle, a coal emporium, or a donkey's palace. I maintain that scavengers should ply their anti-fever craft in all open spaces in towns: "prevention is better than cure." Let us have their *carte de visite* rather than the undertaker's.

R. T.

A CABINET.

Designed by Mr. Talbert; executed by Mr. Forsyth.

A CABINET.

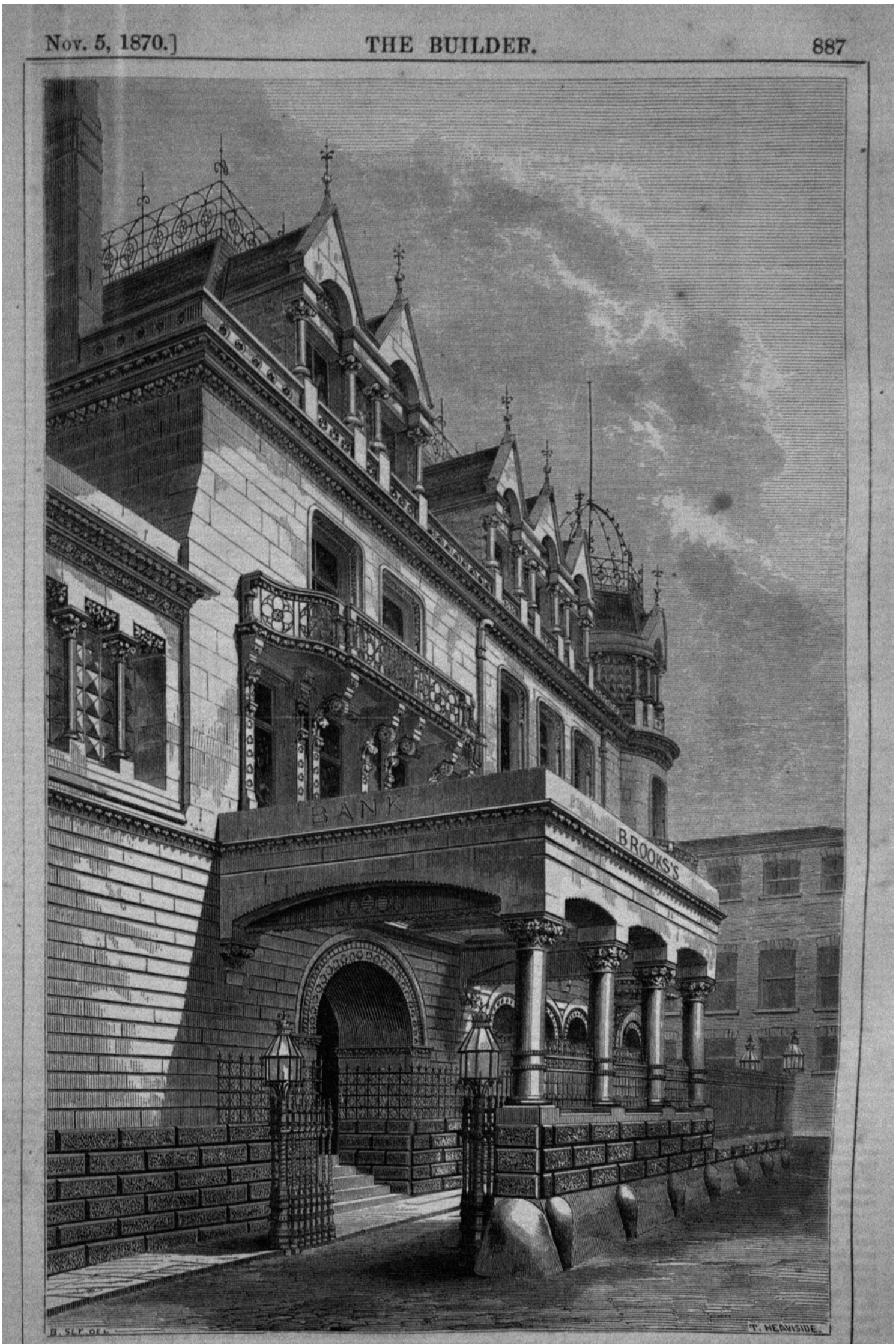
ALTHOUGH the furniture of our houses is of much importance to our comfort and convenience, the preparation of it, except in a few instances, is much neglected, or left to the freaks and fancies of the unskilled in design. A growing change has, however, been manifesting itself of late years. Our principal cabinetmakers feel it their interest to avail themselves of the architect's assistance to meet the improving taste, and desire for change, in their customers; and, though everything that may have come from the pencil of modern architects may not be all that could be desired, still much that is good has been done. The cabinet we have illustrated this week was executed, in ebonized mahogany, in the workshops of Mr. Forsyth, for Mr. E. Hull, of Manchester, Mr. Talbert being the designer. The enrichments consist of two painted panels, on gold grounds, containing portraits of Mr. Hull's two children, brass grills, fret-work on gold ground, ornamental brass hinges, and carving, incised and in relief, gilt. The general effect is very pleasing, and the execution excellent.

BROOKS'S BANK, MANCHESTER.

THESE premises were occupied by the Bank of England for more than thirty years, but during the last twenty they have been materially added to by the late Mr. Samuel Brooks, and by his son, Mr. William Cunliffe Brooks, M.P., of Lombard-street, London, and of the Old Bank, Blackburn. A portion of the new buildings lately erected is shown by our engraving. The porch is the back entrance to the bank, in Chancery-lane, the lower building being the bank wall, and the higher giving an idea of the style of a block of offices in connexion with it.

The works have been carried out from the designs, and under the superintendence of Mr. George Truefitt, architect: the bank work at a cost of about 12,000*l*., and the offices at a cost of 14,000*l*. Mr. Watson was the clerk of the works; the masonry was done by Messrs. Patteson, whose carvers, Messrs. Williams & Mooney, have executed their work from the architect's details with great effect and vigour. The ornamental brasswork was done by Messrs. Johnston, Brothers, of London. The ironwork by Messrs. Bellhouse, of Manchester.

The bank is lighted from above, and is fitted up with a Sienna marble dado throughout, gilt columns, elaborate brass screens, and standards; all, however, having a quiet though handsome appearance. Mr. Truefitt has shown, as usual, much originality in the design.



BROOKS'S BANK, MANCHESTER.—Mr. George Truefitt, Architect.

SOME OBSERVATIONS ON DOORS AND PARTITIONS.

By a Joiner.

There is nothing more disagreeable or unsightly in a well-furnished room than the appearance of an ill-formed, ill-fitting door, and its surrounding architraves, which are usually in keeping in style and workmanship with the door they are supposed to ornament. A few observations on the evils of bad workmanship in our buildings, and some hints for the future prevention of these evils, will not be thrown away. Much of what we may say is generally known to ordinarily good workmen, but experience has convinced us that the knowledge of how to do a thing well is forgotten, or ignored altogether, in the execution of a vast amount of the workmanship in our workshops and buildings. But to the point. The making and framing and finishing of a door and its trimmings is a very simple piece of joinery in these days, and yet how wretched is the execution of the greater part of our ordinary joinery work. Doors or sashes, skirtings or floorings, are seldom or never finished as specified. It would be a miracle to find thicker or better material put in by the contractor than what is specified. This, of course, is not expected; but what is not expected, on the other hand, is found,—thinner material, poorer material, useless material! Who is to blame? But let it pass, on another occasion we will cut the bearing string and exhibit the *rats'* terror at large. Doors, parlour or drawing-room ones, even in the most common class houses, should not be less than 1½ in. thick (full), and the mouldings around their panels ought to exhibit the same appearance to the eye as if struck in the solid. Some people prefer to see the mouldings project above the face of the framing, but, no matter what massiveness or variety the adoption of this method may be made to show, it is not a system to be recommended. The raised panel-work in most of our old British oaken and other doors was seldom raised above the face of the framing. The mouldings round the edge of the framing were in the solid, as were the mouldings round the central squares of the raised panels. Ornamentation around these inner squares was seldom planted on; but if it did happen, it was regulated so that it should not rise above the face of the outer framing of stile and rail. Many of these old doors are to be seen yet in our country and city mansions, and in some of our old public institutions. There are not a few of them centenarian, and older, and many of those that we have examined of eighty and ninety summers are yet strong and serviceable, and are likely to last out the best of our hand-made and present machine-made doors. What was the secret of their good workmanship? It lay in the fact that the timber that composed them was well selected and well seasoned, and not what was lifted from the timber-pond the day previously. Their making also was not a job against time, a sort of hurry-skurry, slap-dash, break-neck "slop-work." Let not our readers smile. The doors in our old public and private dwellings were properly made. Their tenons were cut with exactness, "out of winding;" the shoulders on each side were perfectly square; and it was not left for the framing-cramp to make a close joint by extra pressure where ordinary pressure with exact workmanship would be sufficient. The panels of doors should fit their ploughed grooves ordinarily tight, for panels are more or less given to shrink if not well seasoned. Where the mouldings are planted on, and where the mouldings themselves are not of seasoned material, unsightly evidence of shrinkage will soon present themselves at the margin of the mouldings upon the panel. If the stile and rails of doors are not properly "tryed up" square, and out of winding, it is rarely possible to frame them out of winding, *i.e.*, make them perfectly level on the plane of their face, except by unworkmanlike expedients. Even though they may be forced square for a time by a system of wedging and of kerfing, yet they will, after they are hung, go back again into winding. Thus bad door-making produces a series of other evils that interferes ever afterwards with their appearance and usefulness. When a door is out of square on its face it will not hang plumb; one of its edges may, but the other will not. It will be found that if plumb upon the hanging side, it will be out of plumb upon the closing side, where it will not range perpendicularly with its rebate or stop. Often a door of this description will, when closed, touch the stop at the top, while it is half an inch or a quarter of an inch from it at the bottom, or *vice versâ*. The door in these cases has to be "humoured," or accommodated, as the workman would say, and hung a little out of plumb. Sometimes the workman will strive to knock the door-frame, with a large hammer, out of plumb to suit the door, to the injury of the partition and its plaster coating, if finished. If he fail to move the door-frame without resorting to violent expedients or vast labour, he coaxes matters to an agreement in the putting on of the lock. If the door does not exactly close, from the results of bad workmanship, the spring bolt of the lock and its staple or catch will be made, in its arrangement, to polish off the difficulty. Numerous are the unworthy expedients that have to be resorted to by workmen to make bad work assume the appearance of good work; and hours and hours of valuable time are often lost in striving to cure what a little timely precaution would have prevented. In some places what is called a "saddle" is used to raise up the door the necessary length, to allow its passage over the carpet. A saddle may be a piece of wood from three-eighths of an inch to half an inch in thickness, and of a breadth equal to a door-frame, sometimes inclusive of the projection of the architraves each side. A square equal to the thickness of the door is left in the middle, and then the outer breadth is chamfered down to about ¼ in. thick, which is rounded on the edge. This, being nailed to the floor, allows the door, when open, perfect freedom over the carpet. Instead, however, of nailing a saddle down upon the floor for this purpose, a better plan would be to have a length of flooring-board under the door three-eighths of an inch thicker than the common flooring-board. Let this piece extend from the outside of the architrave in length, and be in breadth equal to the thickness of the finished partition. It can be chamfered and laid at the same time with the flooring, and it will make a better job than the surface nailed on saddle. The saddle, however, can be dispensed with by hanging the door with hinges with rising joints. There are other expedients that may also be adopted, involving some trouble, by which either the door when opened may be made to rise sufficiently to free the thickest carpet, and when closed to be nearly air-tight at the bottom. Doors should not be hung where there are lath-and-plaster partitions until the plaster coating is pretty dry. The dampness will both affect the door and door-frame, and cause the wood to swell. This will more particularly be the case when the wood in the frame and door is green and unseasoned stuff. It will be often found that though sufficient freedom be left in the fitting and hanging of the door, yet the moisture arising from the wet plaster will cause the stuff to swell considerably, and the door will appear too large for its opening a day or two after first fitting. The door should not be re-fitted again immediately; if it is, it will after a short time be found to have too much freedom, and will look unsightly. It would be always better not to hang a door until the partitions were tolerably dry. Many are the evils in our new buildings resulting from a neglect of these precautions, but they are evils attending on hurried work, where good intentions may exist but circumstances prevent their being carried out. Much time is lost by the workman in fitting and hanging doors, and the system persisted in at present must be condemned. If a door-frame is properly put up, square, straight along the stiles, and out of winding, the workman can square and shoot his door to the required size, and put on the hinges upon the door, without once offering it up, until he is ready to drive in the screws. He can do all at the bench in the building. Let him simply provide himself with a square with a blade sufficiently long to square his door, and a rod or lath of wood to take the height and breadth, allowing for freedom. He can mark the place of his hinges accurately on this rod, and cut their place by it on both the door-frame and door-stile. If he but practises this method, he will find that it will save him a great deal of useless labour in lifting the door, propping it up, and marking it along by the edge of the door-frame. If the workman is on piece-work, we would advise him to adopt this method, for certain we are that by so doing he would fit and hang three doors while he would be fumbling over one by the old methods. The wretched appearance of some of the doors and door finishings in our houses is also attributable to ill-constructed partitions. In nine out of every dozen of our dwellings may be seen distorted architraves, doors either dragging on one end on the floor, or rubbing on the other against the head of the door-frame, the latter often being pressed down an inch or inch and a half out of square. The wall may be seen cracked, the skirting-boards torn from their places, the floors sunk, and the angles between the wall and the ceiling riven asunder. The evil does not rest even here; it is carried up and affects the very roof and outer walls. Bad foundations are not always the cause of this, but badly-constructed partitions. Partitions are placed by some of our architects, as well as our builders, in a manner whereby they do more harm than service. A timber partition requires a good support, as well as a wall requires a good foundation; but how often do we not see them carried from floor to floor one over another, or perhaps a little on one side of another, and all this accumulated weight has to be supported by the floors and outer walls. A dwarf wall should have at least formed their first foundation and support in the basement story. In many of our dwelling-houses, timber or one-brick thick partitions, with studding at intervals, are put up with utter want of thought and carelessness. Many times we have seen them put up on the common flooring, with no other support underneath but what the common joist or joists afforded. If a partition, timber or composite (timber and brick), be put up, and if it range with the line of joists, the joists above which they are raised should be double the thickness of the common joists or more, or two common joists should be bolted together. If they are set upon a floor without any wall or pillar support from below, the partition should be well framed and properly trussed. In all framed and trussed partitions, or in common ones, the principle of the arch should be considered and adhered to to relieve both the floors and outer walls. Some people foolishly consider that if the floor is partly relieved, the wall can be made to bear the rest, or rather they sometimes aim at throwing all the thrust against the wall. If they succeed, which they do not always, they are not to be complimented for their sagacity. Partitions, instead of being a dead weight upon a floor or floors, ought to be made to conduce to the whole stability of the building from base to roof-tree. The exigencies of house-room, want of increased accommodation, and also false economy have been allowed to interfere violently with the principles of construction. Architects have to please their clients in the same manner as parents have to please their children. They are obliged sometimes to provide a room here, and a closet there, to suit the peculiar whims of people who do not know their own mind a minute. From these causes evils arise, and a lasting deformity, or an eventual crash, is the consequence. All timber partitions that are not framed or trussed should be well bridged at least with a double or treble row of herring-bone bridging, according to the height.

Where large halls are required on second or higher floors, and where numerous small rooms and closets are required to be partitioned off, above these halls,—in this case, the architect has to exert his powers, and exercise his judgment. He can raise no support in the hall, column, or otherwise, without partly spoiling the effect, or occupying needed space. A girder must be hit upon in this case to get over the difficulty of supporting the heavy floor above. With a girder of sufficient depth and width for the span, trussed with queen-posts, and a horizontal tie, with the addition of good struts, the difficulty may be got over nicely. Suspension-rods might be also used in this case from the roof. This plan, however, ought to be only used in connexion with a strong, well-framed roof. Badly-constructed partitions are the cause of badly-fitting doors, undulating and creaking floors, open joints in mouldings and trimmings, cracked ceilings, and a host of other eyesores and evils.

Returning to the subject of doors, their hanging and finishing, we will say a few words more about their furniture. Mortise locks are the best for all inside doors aiming at any respectability, but mortise locks much smaller and better than what are at present used. We have often wondered how it was the large old mortise locks so common in our buildings have been retained so long. In the putting of them on both the stile and middle rail of the door are considerably weakened, at a place where they require strength. Unless the door was an uncommonly thick one, the old-fashioned mortise locks nearly destroyed the stile and tenons of the lock, or middle rail. Rim locks are not to be recommended, no matter where they are to be used.

On common closet doors and bedroom doors, even at the top of the house, they are not serviceable. Being on the face of the door, they are unsightly, and, together with their projecting key, box staples, and sharp rim edges, are liable to catch in people's clothes and articles of dress. Those who require self-shutting doors in a house can have them; but we think it is better to dispense with these contrivances for inside parlour or drawing-room doors. An inside door is not like a hall door or a shop door. A parlour or drawing-room door can be closed better and more carefully by the hand that opens it than by mechanical contrivances; besides, no necessity exists, as far as we can see, for door-opening and door-closing contrivances in parlours and drawing-rooms. With public offices, of course, under some conditions, a porter can be dispensed with; but when we can do without our servants altogether we may think of adopting more advanced methods of indulging our laziness, and getting ourselves fed by machinery, as well as waited upon. A few more remarks to workmen may not be out of place. Every young apprentice workman thinks he can fit and hang a door. It is such a common task, he thinks it is impossible he can do it badly. Yet let us say there is a little skill and taste required in the proper fitting and hanging of doors. We are sometimes astounded to see so many frightful examples of bad door fitting, and hanging, and finishing exhibited in our dwelling-houses. It would appear to us that the more easily a thing can be performed, it happens as a consequence that it is performed badly. We have known workmen to hang a door in half an hour, while other men spent over a similar task half a day; and if they were to spend a week, it would not at the end of that time be properly done. Practical workmen who read these remarks will understand us. Nothing is more unworkmen-like than to leave the hinge of a door badly fitted, its bed cut too large for it, and bits of wedges or pieces of stuff glued in to fill up gaping wounds — everything trusting to the daub of paint to cure the eyesore. Sometimes it is a lump of putty the architect, builder, clerk of works, or foreman will find is pressed into service for making a close joint or fit. Putty is peradventure betimes the salvation, but more often the death of the botch. Putty is useful in its way—it is useful for glazing, or for stopping up a nail-hole, but it ought to be discarded from the appliances of the good workman.

The surest test of good workmanship in building is that neither workman nor employer shall feel afraid to have it examined before it gets even one coat of priming colour. But how often is it not the case that both builder and workmen are in a sputter when they hear the architect or owner is coming, to hide the evidence of their neglect or guilt. Haste all hands too: corruption and foulness are bridged over, or plastered in, and wounds and rottenness are puttied and painted over.

DINNER FOR BUILDERS' BENEVOLENT INSTITUTION.

The twenty-third anniversary festival in aid of this charity took place on Thursday, the 27th ult., at Willis's Rooms, King-street, St. James's, the President (Mr. Alfred J. Mansfield) in the chair, supported by a large number of the leading builders and building material factors of the metropolis.

The usual loyal and patriotic toasts having been duly honoured (Mr. Stirling replying on behalf of the Volunteers to that of "The Army, Navy, and Volunteers," with which his name had been coupled),—

The Chairman proposed the toast of the evening,—"The Builders' Benevolent Institution —may prosperity attend it!" He had very great pleasure in seeing so large an attendance that evening in the interests of the Institution, which was founded twenty-three years ago, and it gave him further pleasure in seeing its founder (Mr. Cozens) among the company. The Institution was established for the relief of any members of the building trade, or of the trades connected therewith, who might, from adverse vicissitudes of fortune, become reduced in circumstances. The Institution had since its establishment gone on satisfactorily and prosperously. It had, however, sustained a misfortune this year. The directors had made a mistake; they had, unfortunately, elected a very inefficient president. He hoped, however, that the members would most zealously aid the directors in averting any loss to the Institution that blunder may have entailed; and if they would only be so kind as to overlook his shortcomings, he should feel very greatly indebted to them. He felt a great interest in the Institution, and he would do all he could to further its prosperity. There were now 44 pensioners in receipt of annuities from the Institution—22 men and 22 women. The males each received an annuity of 24*l.*, the females each 20*l.* He should be very glad to see these annuities increased—those of the men to 30*l.*, and those of the women to 25*l.*, and he was sure that one and all of the gentlemen there present would also be very glad to see that result attained. He therefore asked them to endeavour to effect that object, and to aid the Institution by increasing, if possible, their annual subscriptions, and by publicly making known the good that the Institution effected. The number of persons who had received aid in the shape of annuities from the Institution since its establishment was 108. These figures showed how much good had been done—how much distress had been alleviated, by the operations of the Institution. He asked the company to invite further subscriptions: if they could not obtain guineas, let them take half-guineas. There were many builders and many persons connected with the building trade who had made large fortunes, and there were many, doubtless, who were making larger fortunes now; but, alas! there were many also who, supposing themselves to be in the right groove to prosperity, had suddenly glided backwards into poverty. These it was the object of the Institution to relieve; and therefore he asked them to drink most cordially and enthusiastically to the prosperity of the Builders' Benevolent Institution.

Mr. Benjamin Hannen, in proposing the next toast, said that the task he had to perform was a very agreeable one, viz., he had to ask them to drink to the health of their worthy President, the Chairman of the evening. He was sorry to say that he had not been able, up to the present time, to invent any way of getting over the difficulties of praising a gentleman to his face. If his friend Mr. Mansfield had not been present, he (Mr. Hannen) should have reminded the company that this was not the first generation of the Mansfields who had done honour to the building trade. Having had the pleasure of knowing the Chairman's father, he (the speaker) should be able to say to his friend in the chair that he was quite certain that he was following in the steps of his father, and that he was likely very much indeed to increase the credit of that name, and the respect in which it was held. He was quite certain that there were none present who were acquainted with him who did not know that there did not exist in the trade a more straightforward man of business. If they wanted to consult a man with a clear head, guided by strict integrity, they could not do better than go to him, and he (the speaker) might say that there was no one in the building trade whom he was prouder to call his friend than the gentleman who then filled the chair. He should have added, but for a circumstance which had occurred that evening, that they could not have had a more charitable man than Mr. Mansfield as president, but in face of the gross libel which the Chairman had put forth concerning the present President he had nothing to say to that whatever.

The Chairman having briefly replied, he proposed "The Patrons, Vice-presidents, and Trustees."

Mr. Robinson, in reply, said he regretted exceedingly that none of the trustees were present. He might say, on their behalf, however, that they had the interests of the Institution deeply at heart, the duties they had to perform in connexion with it being a source of sincere pleasure and a labour of love to them. In their name, he thanked the company for the manner in which the toast had been responded to.

Mr. George Plucknett, in returning thanks, as treasurer, said he naturally took a great interest in the institution, with which he had been connected for several years. He was desirous to see it prosperous, and he wished it was in his power to do more than he did for it. His office as treasurer brought the affairs of the institution before him in a prominent manner, and he could testify that they were managed by a most excellent committee, who took the greatest possible interest in the expenditure and in all matters relating to the prosperity of the Society. He took that opportunity of bearing his humble testimony to their exertions, which, on his part, he was always happy to second. He was glad to see their excellent chairman that evening taking his post, and feeling that, while looking out for his own prosperity, he was glad to give his time in trying to provide for those less fortunate than himself. He also begged to thank Mr. Hannen, whom they all remembered two years ago taking the chair for the Institution, and doing so much for its benefit. He was sure they were all proud to have a man of his ability in connexion with their society. But in speaking of the prosperity of the Institution, he must notice its drawbacks, which he wished he could urge upon all present and all connected with the trade. It was a very hard thing, but some six or eight poor people were turned away from the Institution every year because it had not quite enough to provide for them. When those poor people came to the Institution, they were far stricken in years, and two or three years' delay was a very great time to them out of the short period they had to live. He felt the more concerned at this because there was a vast number of men belonging to the trade who did not subscribe to the Institution. The greatest possible credit was due to the large employers of labour. A glance at the subscription lists would show the large sums they had for years contributed to the Institution. But it was not so with a very large proportion of builders, and it was to be regretted that out of the money they doubtless spent carelessly every year, they did not send their half-guinea or guinea to the Institution. If only a small portion of the men he referred to were to come forward they would be able to provide for all those applicants now turned away, and have abundance of funds. He hoped, therefore, that all present would, as they had opportunity, bring the claims of the Institution prominently forward. An appeal had already been made to the class of men referred to, but with a very unsatisfactory result. They did not mean to let it rest, however. He had already seen the Institution make great progress, and he hoped he should live to see the time when the Institution would be in a position to relieve the wants of all its applicants.

Mr. A. G. Harris, the secretary, then read a list of subscriptions, amounting in the aggregate to upwards of 370*l.*, a slight advance upon former years. This announcement was received with great applause.

The Chairman next proposed "The Architects and Surveyors." Without the architects the building trade would indeed be in a sorry plight. The builders were much indebted to them. Walking through the streets of the metropolis or of any provincial town, he thought they might be justly proud of the productions of the architects of this generation, and he thought those productions, whether in ecclesiastical, municipal, or domestic architecture, might vie with the modern architecture of foreign countries. The builders were also very much indebted to the gentlemen of the other branch of the profession—the surveyors. Without the surveyors the building trade could not get on. They (the company) thanked them very much indeed for all the aid and assistance that they continually gave. With the toast he begged to couple the name of Mr. Young.

Mr. Young, in responding, said he was afraid the architects and surveyors had a very unworthy representative in him, but no one could respond to the toast with more sincerity than he did. He was very much indebted to both architects and builders. He knew many architects personally, and he was sure, seeing their specifications as he had, that the company, as a body of builders, must have very great confidence in them. There was no doubt that their specifications were very stringent, and if they were not the honourable set of men they were, no body of men with the capital that the builders had engaged in their trade would act under them. He had often felt this, and he knew solicitors had as well. On behalf of "The Architects and Surveyors," he thanked the company most heartily for the way in which they had received the toast.

The Chairman said that the last toast he had to propose was that of "The Directors and Stewards." He coupled with that toast the name of Mr. Cozens, the founder of the Institution. Had it not been for that estimable gentleman the Society would not have been in existence. He had ever watched over its progress, and had devoted his time to its interests. To the directors, also, they were very much indebted for the undivided attention they had given to its interests. He had also particularly to thank the stewards that evening for their kind co-operation in augmenting the amount of the subscriptions.

Mr. Cozens briefly replied, and expressed his gratification in finding such a respectable and numerous company present to acknowledge the fact that he had been instrumental in doing some good. By their exertions they would not only help the unfortunate, but incite others to do the same.

The company then broke up.

MISTAKEN CRITICISM.

Sir,—Ought not the professional critic in pictorial affairs to understand something of architecture? My reason for asking is, because the writer of a notice on the Old Bond-street Gallery, in the *Pall-mall Gazette* of October 17th, has been misled, through an error in the catalogue of that exhibition, into a display of curious architectural ignorance. A picture therein, called "The Florence Market" is obviously a misprint for "Flower Market." In the first place, the architecture in the picture is Belgian or Dutch; and, in the second place, there is no flower-market (the subject of the picture) in Florence, where all the trade in flowers is carried on independently of a fixed market, by flower-girls. The *Pall-mall Gazette* critic, who speaks of this picture as a "rigid but painstaking study of the Mercato at Florence," has been followed by the critic of the *Graphic* of October 29th, who calls the same picture "a carefully painted" one "of the Market-place at Florence." Possibly other critics, whose observations I have not been so fortunate as to read, have been equally careful to be inaccurate in what would be a trifle, if these remarks did not indicate that neither their eyes nor their intelligences are brought into very active play at a press private view.

Una Fiorajo.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Sir,—In a leading article which appears in a contemporary last week, commenting on the present management and future prospects of the Institute, the following passage occurs:—

"A *rendezvous* for members is a thing which we cannot help believing is very much required,—apart, that is to say, from the mere ordinary meetings. How this could be accomplished we do not profess to say; but at present an incidental visit to the rooms of the Institute on anything like business is enough to give one the horrors, whilst the idea of a member dropping in when passing, to inquire the news, is quite out of the question. Whether the official persons whom one sees at work are equally devoid of liveliness or other human elasticity when off duty it is impossible to say; but the melancholy of solitude which appears to pervade them and all their surroundings when in harness, reminds, one of a theatre by daylight more than anything else, with funereal carpenters setting the sad scenes."

Will you kindly allow me, through the medium of your columns, to ask the writer of this caustic, but no doubt well-intentioned article, what is the precise amount of liveliness and elasticity which he expects from the "official persons" referred to? Whether he thinks that their duties should be discharged by a happy combination of the pleasure of business with the "business of pleasure?" that they should be bound to entertain him with anecdote when he calls in Conduit-street, or to celebrate his visit in bumpers of champagne?

Does he consider that it would be desirable to engage the services of a few gentlemen from the *Punch* office, who might help to make the secretary's minutes of proceedings more amusing? or, in order to dissipate the "melancholy of solitude," that a German band should be engaged, and instructed to perform, at intervals, in the library?

No doubt a few suggestions on such points would receive immediate attention from the Institute authorities, and would at the same time enlighten many members as to the extent of reform proposed in this direction.

"DULCE EST DESIPERE IN LOCO."

CHARGE OF DEFRAUDING A BUILDER.

AT the Hammersmith Police-court, John Fordham Appa, an agent, was charged with obtaining a cheque for 20*l.* by false representations.

Mr. Thomas Hussey, builder, of Kensington, said that on Thursday last the prisoner came to him, representing that he had fallen over some timber in the street where witness was building, and had broken his arm; that he had been to St. George's Hospital, where it was dressed, and that he had come to him for compensation. Witness had not heard of any accident from his watchman, and refused to listen to the prisoner, who went away. He came again on Monday night and asked witness to settle with him, at the same time urging that it would be very expensive if solicitors were employed. Witness asked him what he considered a settlement, and he said about 20*l.* He took the prisoner's name and address, and promised to make inquiries. The prisoner came on the following night by appointment, and he gave him a cheque for 20*l.*, but he immediately charged him with obtaining it by false representations, as he had found that he had been to several other builders and attempted to defraud them.

The Prisoner, who carried his left arm in a sling, wished to know what the false pretences were.

Mr. Dayman said,—representing he had broken his arm by falling over some timber.

Mr. John Walter Hamilton, manager to Messrs. Colls & Sons, builders, Moorgate-street and Camberwell, was called as a witness in Mr. Hussey's case. He said that on Friday last a letter was received from the prisoner claiming compensation for breaking his arm on the Thursday previously by falling over a block of stone at St. Philip's Church, Queen's-road, Battersea. An answer was sent, and the prisoner had since called at witness's office, but he was out at the time.

Patrick Donovan, Mr. Hussey's watchman, said he was on duty on the night of Thursday week, but he did not see the prisoner. He also denied that any timber was lying about the road.

Mr. Dayman decided upon remanding the prisoner.

THE REFUSE OF TOWNS.

SIR,—Your very able article on Sewage Irrigation, in your issue of the 22nd ult., appears to me to go a little too far in discarding all processes except irrigation for the disposal of the refuse of towns.

Wherever irrigation has been adopted, the necessity for extracting the *solids*, to prepare the fluid for that operation, has become apparent; they must therefore be got rid of by some other process in conjunction with the former, and, if used for manure, as they ought to be, must either be carried to and used on the arable land at once, or turned out on the mixen. There are also many towns for which irrigation could only be adopted at a ruinous outlay, where, in fact, irrigation is practically impossible and consequently where processes must be established in substitution thereof.

You seem to hold that no contrivance yet extant will answer for this purpose, and experience would appear to bear out your conviction. The reason, in my opinion, for the want of success in the best-known processes of precipitation and filtration, is that in all of them the solid matter remaining mixed with the fluid is thereby in great measure dissolved, and tends to saturate the fluid with its soluble parts before either precipitation or filtration has commenced; and,—whatever opinion our chemists may inculcate with regard to their richness in fertilising but noxious elements of the fluid, and the poverty, on the contrary, of the solid parts of sulliage,—practice demonstrates that the first are very easily decomposed into harmless matter, whilst the solution of the two combined is very refractory. When, however, the solids are extracted in their normal state, much fertilising matter is retained in them, and the fluid, by means of combined precipitation and filtration, is easily rendered innocuous.

The second Rivers Pollution Commission informs us that the effluent sulliage of London, which contains all the soluble parts of the solids, is sufficiently decomposed in its passage through a certain proportionate mass of sand, to admit of its flowing at once into the nearest watercourse. If such is the case, there is surely no great effort of science in constructing a filter with an equivalent medium for the fluid elements only, especially if, in conjunction therewith, proper precipitants are employed. Four years' experience has so convinced me of practicability of such a process that I have offered to establish at my own cost the necessary works for purifying the effluent water from the sewers of four towns on the Thames, reserving the repayment of my outlay until their efficacy has been demonstrated to the satisfaction of the Thames conservators.

The sums demanded in the event of success contrast most favourably with the estimates for carrying out all other schemes proposed, and yet the commissions and select vestries—no doubt from compassionate motives—have during a long period demurred and continue to hesitate to accept my proposals, alleging in one case as a reason for not at once accepting my offer, that an Act may be passed next session to cause them to lay out all their means in establishing a much more costly system of sewerage.

I venture further to make one comment on the very comprehensive leading article in your last issue on "The Settlement of the Sewage Question." This, with the former article, is so exhaustive of its subject that little remains to be added to make them a complete review of the present state of the question.

In this article you uphold the "separate system;" that is to say, that the sulliage and the rainwater should be conveyed by separate sets of sewers to different destinations,—the sulliage or refuse to the land, and the rainwater to the water-courses. If this system effected all that was absolutely necessary, and got rid entirely of the polluting matters from cities, a great many of the difficulties and expenses met with in carrying out their sewerage would be overcome; but unfortunately the surface refuse is thereby unprovided for in the sewers, and is consequently carried off by the surface drains to pollute and cause sandbanks in the water-courses.

No part of the refuse of towns is so noxious as its road-dirt; and as long as this element of pollution is allowed to escape into the water-courses, the entire purification of our rivers will not be effected.

In all well-arranged systems of sewerage the area of the gully-grates communicating with the sewers is limited in such manner as only to admit during heavy storms the first scourings of the streets and houses, leaving the surplus rain to flow away through surface drains or along superficial channels.

There is no doubt that in almost all cases deep drainage should not be neglected, and should be effected by means of channels constructed under the bed of the impervious sewers.

CHARLES E. AUSTIN.

A NEW PHASE IN COMPETITION.

SIR,—It is proposed to erect a new church at Putney, Surrey. A committee was appointed, who invited six architects to send in designs in competition. The designs have been sent in, and, to the surprise, I should think, of all the competitors, there are two designs sent in by two architects, members still of the committee.

A COMPETITOR.

PERVIOUS ROOF TILES.

SIR,—Could any of your readers recommend something to apply to roofing tiles to prevent their absorbing so much water as they do?

I have a house covered with tiles, and, requiring a good supply of rain water, have provided a large underground tank, but am disappointed that the tiles yield so little water in showery weather, as they absorb so much. If some effective varnish or colourless paint, that would not injure the water, and would come moderate in price, could be brushed over them, it would check this. A tile appears to weigh 2 oz. more when wet than when dry.

Is it not a desideratum in building that some tiles should be made free from the before-named objection?

RAIN WATER.

TAR PAVEMENT.

THE pavement your correspondent, Thos. H. Methven, mentions can only be fit for footpaths, and he appears not to have made any foundation for it. It is usual for every kind of paving to have some good hard dry stuff to lay it upon. The tar pavement I have had laid has lasted many years. Mr. William Wright, of Victoria-road, Deptford, has laid a large quantity of it, and I believe still continues to take contracts for it.

THE LAYER OF THE PAVEMENT.

THE COMPLETION OF ALL SAINTS', CAMBRIDGE.

CONSIDERABLE progress has been made during the past year towards the completion of this edifice. It has been consecrated six years, and from the extreme severity of the architecture, and its very unfinished state, it was subjected to much adverse criticism. For lack of funds, the most striking feature in the design was omitted, nothing but the foundation and the arches for supporting the tower being completed at the time of consecration. By a liberal offer from a parishioner, the vicar was induced to form a committee and make an effort to provide for Cambridge what was so greatly missed, especially in a distant view of the town, a lofty and beautiful spire. The spire proper has been completed, and the vane, the gift of the Chancellor of the University, was fixed by the vicar and his churchwarden, Mr. Balstrode; but there still remains to be built a parapet on the tower, and a spirelet of an ornamental character, about 24 ft. high, at the N.E. angle to the staircase. The total height of the spire from the ground is about 185 ft. The plain mullions have been removed from the north windows of the nave, and the heads filled with rich tracery. A new stone wall with iron gates has replaced the erection which so long disfigured the church. The whole of these works, from designs by Mr. Bodley, of London, have been carried out by Mr. Loveday, of Kibworth, contractor. Within the building progress has also been made towards its completion. The work of decoration has been begun. The roof of the nave has been decorated with black monograms, and varied scroll-work in red colour on the plaster ground. A tall inscription in old English character shows the dedication of the fabric in honour of All Saints, by rehearsing the eight beatitudes. Mr. F. R. Leach, of Cambridge, is carrying out these works. The nave roof has been decorated by Mr. Leach, at his own cost. The whole scheme of decoration and designs is under the superintendence of Mr. C. E. Kempe, of London.

THE NEW HARTLEY WINTNEY UNION WORKHOUSE, ODIHAM.

THE new Hartley Wintney Union Workhouse is now in course of erection at Winchfield Hurst by Messrs. Joseph Bull & Sons, of Southampton, contractors (who have carried out various works in Hampshire and the adjoining counties), from designs by Mr. Edmund Woodthorpe, of London, architect. The members of the Board lately visited the new edifice in procession to complete a tablet which has been erected there containing a list of their names. They were met at the entrance of the building by Mr. Woodthorpe, Mr. H. W. Bull (the senior partner in the firm of Bull & Sons), the clerk of the works (Mr. H. Sanders), two of the architect's staff, the foreman of the works, and others, and the large party were then conducted over the new workhouse. In the main entrance are the male and female tramp wards, and then comes the courtyard, which brings one to the entrance of the main block, where are the board-rooms, dining-hall, kitchen, offices, &c. On the left are work-sheds and laundries, with spacious courtyards leading to the infirmary, which is very nearly completed, as are also the fever wards, the latter being in a forward state. The building is in five blocks, somewhat similar to those at the Southampton Workhouse, and the three in the rear are rapidly approaching completion. The main block and other parts are also roofed in and slated. The house is designed to meet every requirement and regulation of the Poor-law Board. The contract is 10,000*l.* The chairman called the workmen around him, and ordered that they should be supplied with refreshment. The party afterwards partook of a *déjeûner* at the George Hotel, at the invitation of Messrs. Bull & Sons.

THE AURORA BOREALIS.

WITHOUT laying any stress on the "gigantic figure, with bare arms and hands, which were extended upwards as in prayer," and on the belief that the destruction of the world can be foreshadowed by a demonstration of a sign arising from the effect of an aurora borealis, which can be scientifically accounted for by, and referred to, natural causes,—still there sometimes occur coincidences not altogether uninteresting or unworthy of being recorded.

In "Joyce's Scientific Dialogues," mention is made of an aurora borealis which occurred on Monday, October 23, 1804; it was as remarkable as that seen on Monday, October 24, last. Now, by referring to a chronological table of remarkable events, we find that, in 1804, Napoleon I. was proclaimed Emperor, and in the following year, 1805, on October 21, the battle of Trafalgar and the death of Nelson took place. Still, as Ovid says:—

> "Nature knows
> No steadfast station, but ebbs or flows:
> Ever in motion; she destroys her old,
> And casts new figures in another mould;"

and Lucretius tells us that "the world itself is ever young, but its transitory scenes pass swiftly by. Men come, men go, eager as in a race; each stretches forth his hand to seize the torch of life." So much for the perpetual flux as ordained.

It would no doubt be interesting to prepare a table setting forth each most remarkable aurora borealis, with the meteorological observations of the following winter and the events, if any, in connexion.

W. P. GRIFFITH.

CHURCH-BUILDING NEWS.

Meerbrook.—St. Matthew's Church, Meerbrook, has had a memorial tower and chancel erected to the memory of the Condlyffe family, the expense, about 1,100*l.*, having been borne by Miss Catherine Condlyffe, the only survivor of the family. The church now wants a new nave to correspond.

Kearsley Moor.—The memorial stone of the new church of St. Stephen, which is now in course of erection at Kearsley Moor, near Farnworth, has been laid. This church has been projected for several years, but difficulties, mainly connected with the site, have until recently delayed the execution of the scheme. The site has been given by Mr. Starkie, and lies between the National School and the Manchester and Bolton turnpike road. Since the foundations were laid, the building has progressed rapidly, and in some parts is nearly ready for

the roof. There will be accommodation for about 540 persons, and the cost will be somewhere about 3,200*l*. The design for this church was chosen in competition some years since. It is in the Decorated Gothic style.

Watford.—The new chapel erected for the use of the inmates of the Union Workhouse has been opened by the Bishop of Rochester. The new structure is at the south side of the Union House, and it stands on ground that was formerly occupied as the kitchen garden. It is in the Gothic style of architecture, and built of brick, with Bath stone dressings. The principal door is on the north side, and at the west end there is a bell turret. The walls in the interior are of plain brick, relieved by some courses of a darker colour. Accommodation is provided in the nave for 272 persons, the length being 70 ft., the width, 25 ft., and the height to the ridge, 37 ft. The roof is of open work of stained deal; the open seats and other fittings are also of the same material. The chancel is distinguished from the nave by a light screen, on two slender pillars supporting the roof. At the entrance are the reading-desks and pulpit, occupying respectively the south and north sides. A wall on either side, from the east wall, encloses the altar, and the spaces outside will be occupied, that on the north side as an organ-chamber, and the other as a vestry. The floor is laid with Godwin's Hereford encaustic tiles of various colours, worked in patterns. The east window is partially filled with stained glass. In the centre is a small group, "Christ blessing little children." Above are figures, one in each light, symbolical of Faith, Hope, and Charity, and each of the lights has an ornamental border. For the reredos there is a small arch, within which is a marble cross on a ground composed of different marbles, having a peculiar effect. Mr. W. J. Hopkins, of Worcester, is the architect; and the work has been carried out by Mr. G. Warner, builder, of Malvern Link, Worcestershire. The contract was taken for 820*l*., and the sum in hand for the purposes of the building amounts to 1,077*l*. The building is still in an unfinished state, there being no glass in the windows; advantage was, however, taken of the presence of the Bishop in the neighbourhood to open the chapel.

Hertford.—St. Andrew's Church has lately received an addition in the shape of a memorial window of stained glass, which has just been placed in the south transept of the church by Mr. P. Longmore. It has two lights: in one is a representation of Christ blessing little children; in the second, the miracle of the loaves and fishes. In the trefoil, at the top of the window, is a king, crowned. The window was supplied by Messrs. Lavers & Barraud, of Bloomsbury.

Amble.—The consecration of St. Cuthbert's Church, Amble, has taken place. The church has been built from designs by Messrs. Austin & Johnson, of Newcastle, architects. It is in the Early Decorated style, parallelogram in form, and will seat about 360 persons. Mr. Carse, of Amble, was the contractor for the mason's work; Mr. Gilby, of Warkworth, for the carpenter's work; Mr. Fortune, of North Sunderland, for the tiler's work; Mr. King, of Morpeth, for the plumber's work and gasfittings; and Mr. Bowman, of Morpeth, supplied the glass for the windows.

Bristol. — St. Peter's Church has been reopened for public worship. Last year the stonework of the building was restored, at a cost of 250*l*.; and within the past few weeks about 600*l*. have been spent in cleaning the building and improving and augmenting the accommodation. Amongst the principal alterations and improvements may be mentioned the removal of the high pews and the substitution of open benches with carved ends. The organ-screen over the chief entrance has been taken away, and the space thus acquired, with the re-pewing in modern style, has given 200 additional sittings. The organ is to have 200*l*. spent upon it, and is now in the hands of Mr. Vowles, for renovation and improvement. In the chancel, which has been remodelled, oak stalls have been substituted for the reading-desk and churchwardens' seats. The old pulpit has been removed and a new one of freestone, with alabaster shafts, erected in its place. In the chancel, also, have been placed two brass gas-standards.

Starston (*Suffolk*).—The church of the village of Starston has been restored, and enlarged, and re-opened for divine service. Until this year the church consisted of a nave and chancel, south porch, and west tower. Its erection is of various dates. The walls of the nave are of late Norman work, having been since filled in with windows of the Decorated period. The roof of this part, the whole of the chancel, west tower, and porch are in the Perpendicular style, or about the commencement of the fifteenth century. The nave roof is very good in detail, and has been illustrated in Brandon's work on "Open Timber Roofs." It has been restored and re-leaded; all the old parts which would from their soundness permit of being preserved being retained, and the necessary new work has been made similar in size and form to the old. The church was, about twelve years ago, benched in oak; but the rector, the Ven. Archdeacon Hopper, has for some time felt that the accommodation was not sufficient. He, therefore, determined to enlarge it, and called in the assistance of Mr. R. M. Phipson, the architect. Mr. Phipson suggested that the additional room required would be best obtained by throwing out a north aisle, and that the organ-gallery which still remained might be dispensed with, and a new organ-chamber built at the east end of this aisle, opening with stone arches into it and the chancel. This has been accordingly done. Three stone piers and arches in the Decorated style are introduced where the north wall stood, and the windows which were in this wall are re-fixed in the new aisles, the west window being new, of similar character. The roof of this part is made of pitch pine, moulded and carved, and covered with lead. When pulling down the north wall, in about the centre of it, and within 2 ft. of the ground, a niche was discovered. It was about 4 ft. wide and the same in height, measuring to the top of the arch, and had evidently been bricked up for some centuries. It was about 1 ft. deep, and on he wall at the back of it was painted, in very brilliant colours, a scene representing the death of the Virgin Mary. The colour shook off like dust, but a drawing of it has been made, and will form one of the illustrations of the *Archæological Journal*. The additional seating is of the same character as that put up twelve years ago. The church is heated by Gidney's underground stove, and the whole of the work has been done by Mr. Grimwood, of Weybread, the cost, including every expense, being a little under 1,000*l*.

Highclere.—In the beginning of last year, Lord Carnarvon instructed Mr. Gilbert Scott with the preparation of designs for Highclere Church. The works were begun early in June of the same year, and in July, the principal stone was laid by the Countess of Carnarvon. The works are rapidly approaching completion, and it is expected the consecration will take place in the last week of November. The church is situated just below Clear Lodge, on the road from the park to the village, and forms a prominent feature in the landscape, when seen from the Andover road. The style is Early English, of the fourteenth century. The church is built of flint stone, having all dressings of Bath stone. The plan is in the form of a Latin cross, and of course stands east and west. From the approach from the village, the west elevation and the west gable are first seen, flanked with buttresses, their weatherings terminating in a trefoil coping: between and round the buttresses is a projecting string, over which is a two-light window, having projecting labels, terminating in carved bosses. The two-light window is surmounted by a circular window having eight cusps, and a label and bosses richly carved. On the north elevation is the main entrance door, with a moulded arch, with label and carved bosses. Further on are two two-light windows, having irregularly shaped quoins and arch stones; beyond this lies the tower, flanked on every side by stout buttresses; in both angles are projections for the doors to the vestry and ringing-rooms, the projection for the admission of the turret stairs having the stone weathering finishing in a carved cross. The tower measures 54 ft. in height, being surmounted by a spire, estimated at about 48 ft., the height thus being 102 ft. to the top of the spire, without counting the vane. The tower is perforated with many lights and openings, and the spire has four projecting dormers, filled up with louvre boarding. Beyond the tower are the windows to the chancel, having moulded arches, projecting labels, and bosses to the same, carved in the natural foliage of the country. We now come to the east elevation, the most richly carved and decorated portion of the building externally. The gable is supported on the front by four buttresses, flanked by others at the angles. The main feature is an arcading, consisting of four arches, supported on shafting. These form niches. In the centre of each is a carved corbel (presumably, these corbels are intended to receive statues of the four evangelists). Over this is a wheel window, richly moulded, having carved spandrels, with carved label, terminating in carved bosses. The gable terminates in a cross. The south elevation consists of a series of windows, throwing light into the chancel and aisle. These are much similar to those already described. The whole of the roofing is covered with ornamental red tiles, set in patterns, and the east end of the nave is surmounted with a stone cross. On entering the church, the first thing that attracts the attention is the nave arcade, consisting of a series of octagon stone shafting, resting on carved and moulded bases, and surmounted by carved caps. From these spring the moulded arches, having labels projecting and terminating in bosses, representing female heads in a devotional attitude. The corbels on the responds of the nave arcade are carved, representing male and female heads crowned with thorns. The windows in the nave and aisle have stone sills, coins, and rear arches, dying out on the jambs. The responds of the chancel arch are supported by shafting having carved caps. The chancel arch contains richly arranged mouldings, the centre one being carved in a dog's tooth carving. The corbels from which the chancel inner arch springs are carved, representing male and female heads "piously expressive:" these are surmounted and crowned with flowers and foliage conventionally treated. The tower arch is formed to contain the organ, and on the south side of the altar is a two-light window, forming two seats. The most notable thing in the chancel is the reredos just over the altar: it is composed of coloured marble shafting, having bases and arches of Caen stone, with carved medallions in the spandrels: it is partly crowned with cresting and crocketing, carved. The floor of the sanctuary is laid with encaustic tiles of a variegated pattern, which, we understand, was designed by the Rev. Lord A. Compton. The chancel is laid with glazed Minton tiles, artistically arranged. There are three stone steps ascending to the altar-rail. The choir stalls are ranged along each side of the chancel and close to these is the door of the vestry, which is situated under the tower. The floors of the nave and aisle are laid in black and red tiles, in different patterns, and the church is seated for 250 sittings. The monuments are a notable feature in the church. Much expense must have been required to remove these from the old church and restore and fix them here, especially the Kingsmill monument, which was done by artists from London, and forms a prominent feature near the door. Quaint inscriptions on some of the tablets are worthy of notice. Among others we noticed a statue by Roubilliac, which is not a common thing in a country parish church. The roofing in the chancel aisle and nave is an open one, and is of stained and varnished wood. We understand several memorial windows are at once to be inserted. The church is to be heated with Gurney stoves, and thirteen of Moore's ventilators have well provided for the ventilation. Messrs. Jackson & Shaw, of London, are the contractors for the works; Messrs. Farmer & Brindley were selected by Mr. Scott as the artists for the carving; Ravenor, Brothers, executed the decorations; and Mr. Blackie is clerk of the works.

Clapton Park. — The foundation stone of All Saints New District Church was laid on Saturday last, the 29th of October, by Mr. A. J. B. Beresford, M.P. The Rev, J. F. Stammers, the incumbent designate, assisted by several of the local clergy, officiated. The Church, which will accommodate upwards of 800 worshippers, will consist of a nave, lighted by a clearstory, aisles, chancel, and south aisle, with vestries and organ-chamber on the north side of the chancel. The walls will be faced externally with Kentish rag, and internally with red brick, relieved by coloured bands. The tower and spire, to be hereafter added, will be erected at the west end of the south aisle of the nave. The style of architecture adopted is the Geometrical of the end of the thirteenth century. The architect under whose supervision the above works are being carried out is Mr. Francis T. Dollman. The contractors are Messrs. Dove Brothers.

Hereford.—Canon Pyon Church has been reopened, after restoration, under the superintendence of Mr. Ward, architect. The roof of the nave is the chief feature of the restoration, and was begun some years ago, but delayed from

want of funds. Mr. Chick dealt with the chancel and Mr. Haddon with the chancel screen and stalls.

Books Received.

THE *Rectangular Review* for the current quarter sustains our good opinion of it as a well-conducted periodical, notwithstanding its somewhat crotchety and unfortunate name, which certainly stands in its way as a successful quarterly, of general interest to the public. The present issue contains papers on "Our Scholastic Institutions," "Ancient Mottoes," "Opera and Drama," "Bismarck and the Bismarcks," with portraits of the Count and his wife, a view of his home in Pomerania, and a sketch of his coat of arms. There are also papers on "Analogies of Music and Painting;" on "Freemasonry: its Use and Abuse;" on "Incremation *v.* Interment and Undertakers;" on "Beauty and Cosmetics;" and others.—*Fraser's Magazine* for November contains a paper on "Modern Italian Art," from which we may quote a passage or two:—

> Italian art of to-day, like its literature, is too much a reflection of the past. The former especially is kept in existence rather by its traditions and erudition than by an understanding of the life of to-day. Government considers it a duty to foster art by means of academies, competitive exhibitions, free lectures, and the annual purchase of certain works. Art, like other education, being made a pensioner of the State, as might be expected, the public assumes no responsibility in the matter, except under official pressure or professional clap-trap, when some personal interest is at stake. There are no Italian buyers of works of art to speak of. Works purchased by the Government are usually put where they are little seen. In general they are not worthy of exhibition. Unless Italy ceases as entirely to live in her old æsthetic as in her effete ecclesiastical and political training, the promise of a future in art commensurate to her ancient renown is absolutely nothing. New Italy has to make its gods in its own image. A nation, like an individual, can make a genuine character for itself only by strenuous exertions in harmony with its specific conditions. Now, the clever artists of Italy look two ways at once for guidance—one eye turned on antiquity, and the other to the Imperial French school, which is as bad a guide in refounding their national art as are Napoleonic ideas in remodelling their government."

——A specimen of "A Dictionary of Technical Terms relating to Iron; in French, German, and English," in course of preparation, by Alex. Tolhausen, Ph.D., Translator to the Patent Office, has been published as a supplement to the *Engineer* of 14th October, 1870.

Miscellanea.

The Truck System in the Black Country. The *Birmingham Daily Gazette* has sent a special commissioner into the Black Country to inquire into the working of the "Truck" or "Tommy" system. The first of his letters, which appeared on the 31st ult., brings to light an amount of misery among the nailmaking trade in Dudley perfectly heartrending. He says,—"The houses of nailers are generally to be found in the lowest part of a town or hamlet, in filthy courts and back slums. Take, for instance, those in Dudley. We find them in Badger's-square, in a disgusting court in Tower-street, at the Belpers, and the Barracks. So pinched with poverty are the tenants of the dens and holes here situated, that the small rent demanded cannot be regularly paid. Consequently, landlords can ill afford to lay out money in repairs, or in sanitary operations. Tenants thus become the victim of disease. Upon a recent visit to the barracks, in Dudley, we found the houses in a miserably dilapidated condition, and some of them not fit for occupation. The out-houses (within two yards of the back-doors) were running over with filth, and the adjoining ashpits topful. In close proximity to these places are the workshops of the nailers. It will not be surprising, then, that fever should be raging in the locality."

Site of Market for Foreign Cattle—The Corporation of London, as it appears by the report of the last meeting of Common Council, have under their consideration the adoption of a suitable site for the intended new market for foreign cattle. Deptford dockyard, it is now said, might be utilised for this purpose; and the markets committee are about to inspect and report upon its suitability.

St. Paul's Cathedral.—According to the *City Press*, the Girdlers' Company have voted the sum of twenty guineas towards the fund being raised for the completion of the interior of St. Paul's. Eleven of the City companies have recently subscribed to this great work.

Locomotive Street Vehicles.—In originating the modern velocipede movement, as we not long since showed, the *Builder* suggested the use of various motive powers to be applied to velocipedes, Bath chairs, cabs, and even omnibuses; and, amongst others, india-rubber "accumulators" of power. This, we observe, is now being done in America. The *New Orleans Republican*, in an article entitled "An Omnibus moved by Clockwork," describes a new self-acting omnibus which has recently been tried in that city:—"Underneath the carriage is what seems an enlargement of an American clock-spring made of india-rubber. There is a strong platform, on which the car is to rest, and to this platform is attached the by no means complicated combination of cogs and wheels, which, when acted upon by the elastic power of india-rubber, moves the car with steady motion at almost any given rate of speed. In front, beneath the platform, there is a large wheel, called in the specification of the patent the power pulley, among mechanics known as the master-wheel. It acts like the drum on which is wound the mainspring of a watch. By means of a circular lever, exactly like the horizontal wheel to regulate the breaks in ordinary cars, the master-wheel is turned, and the india-rubber wound round it until that remaining on the pulleys acquires extreme tension. When wound up, the contractile power of the india-rubber bands will give the requisite motion to the machinery for the propulsion of the car. The propelling machinery of the car is provided with a means of reversing its motion, which is acted upon by a lever adapted to the foot; by this means the car can be made to run backward as well as forward with equal facility. There is no necessity to stop the car in order to wind up the machinery. It can be wound up while at full speed with as much facility as a Lepine watch can be wound up while going.

New Bridge at Bathampton.—The new bridge over the Avon, at Bathampton, which will afford a convenient means of communication between that village and Batheaston, has been opened for traffic. It has been erected at a cost of about 2,500*l*, by Mr. Edwin Hill, of Bath. It is a stone structure, built in eight Gothic arches, the three principal ones being in the water, while the other five are land arches. The span of the main arches is 30 ft. each, and the height of the roadway from high-water mark is about 14 ft. The roadway on the Bathampton side begins at the turn which the old ferry-road makes just before coming to the mill, and is about 120 yards in length. It is raised, and enclosed with wooden railings on either side. The length of the bridge is 200 ft., and its width about 25 ft. The parapet on either side is pierced with trefoil perforations, and ornamental caps are fixed at the head of the main buttresses. A toll-house has been built, in the Gothic style, near the brewery on the Batheaston side.

Bradford Corporation and Manningham Park.—The corporation of Bradford some months since accepted an offer from Mr. Samuel Cunliffe Lister to sell to them Manningham Park, at the price of 40,000*l*. The park is situated within the borough of Bradford, and is in the centre of its most sylvan township, Manningham; is beautifully adorned with fine timber; and commands wide and extensive prospects of the hills which inclose the valleys of Shipley and the Aire. The estimated value of the estate is 65,000*l*, but Mr. Lister consented to accept 40,000*l*., on condition that at least not fewer than forty acres of the park should be dedicated for ever to the use of the inhabitants of the borough. The purchase having been effected, after some necessary delay, the mayor and the corporation of Bradford recently entered into formal possession of the estate.

Steel.—The exports of unwrought steel from the United Kingdom in August amounted to 3,136 tons, against 2,712 tons in August, 1869, and 2,444 tons in August, 1868. The exports to France to August 31st this year, amounted to 2,112 tons, against 1,950 tons in the corresponding period of 1869, and 1,667 tons in the corresponding period of 1868. This branch of our exports would appear to be steadily extending.

The Institution of Civil Engineers.—At the opening meeting of the members of this Corporation for the session 1870–71, on Tuesday next, the 8th inst., a paper, by Mr. Thos. D. Ridley, descriptive of the "Cofferdams used in the execution of No. 2 Contract of the Thames Embankment" will be read and discussed.

The Architectural and Archæological Society of Durham.—The Architectural and Archæological Society of Durham and Northumberland held its last meeting for the season on Monday, at Tynemouth and Seaton Delaval. The day was tolerably fine for the season, and there was a good attendance of members. They met at Tynemouth, at eleven o'clock, and proceeded to the Priory, which was examined. At noon the company went by the Blyth and Tyne train to Seaton Delaval, where the hall and church were visited. At 2·49 they returned to Cullercoats, and viewed the Monk's Stone at Monk House. The members dined together in the evening.

Alterations of the Guildhall, Swansea. Seven tenders were received in reply to advertisement. Mr. Phipps, the architect, estimated the cost of the work at about 2,800*l*. or 2,900*l*. The tenders were:—Mr. David Morgan (Swansea), 3,750*l*.; Mr. Wm. Williams (Swansea), 3,507*l*.; Mr. Thos. Rees (Swansea), 3,189*l*.; Messrs. Thomas, Watkins, & Jenkins (Swansea), 3,100*l*.; Mr. Joseph C. Rees (Neath), 2,945*l*.; Mr. Thos. White (Swansea), 2,750*l*.; and Mr. John Everall (Great Malvern), 2,672*l*. The tender of Mr. Everall, being the lowest, was accepted, and the work has been commenced.

Revival of Trade.—At the quarterly meeting of the Manchester Chamber of Commerce the Chairman stated that there had been an enormous increase of business at home, principally due to the war, and particularly in the shipping trade. The railway companies at their Manchester centre had been so overwhelmed with goods of all kinds during August, September, and October, that it had been with the greatest difficulty they could get through their traffic. They had had to work night and day in order to deal with the immense quantity of goods that were poured in upon them.

Covent Garden Opera.—Those who provide the public at this time of the year with good pictures or good music, are entitled to thanks. We have elsewhere spoken of some of the former now accessible in London; let us add an intimation that Mr. Mapleson has commenced a short series of operatic performances at the Royal Italian Opera House with a stronger company than can usually be looked for in the winter, including the admirable Mdlle. Titiens, Madame Sinico, Madame Trebelli, Mdlle. Ilma di Murska, Signor Cotogni, and Signor Faucelli. *Lucrezia Borgia* was given on Tuesday evening with completeness and effect.

Rupert-street Improvement.—We have to congratulate the Vestry of St. James's,—and we might say the whole of the West-end of London,—on the decision now come to with reference to the opening of this communication between Oxford-street and the South. It has been the work of eight years, and the result of divers regular pitched battles and many skirmishes. The Metropolitan Board of Works also deserve acknowledgment for prompt recognition of the recent special opportunities for negociations, which will result in the happy accomplishment of the long-wanted improvement.

Monument to a Welsh Bard.—Progress is being made by Mr. A. H. James, sculptor, of Newport, Monmouthshire, with the monument to be erected at Groeswen, near Caerphilly, by public subscription, to the memory of Caledfryn, who, during his life, was one of the most popular bards of Wales. An immense block of Radyr granite has been laid on the vault as the foundation of the monument, which will be composed of polished red granite, standing upwards of 9 ft. high, the base being 9 ft. square. In one of the panels of the die will be placed a bronze medallion of the deceased bard.

St. David's Cathedral.—Messrs. Wood & Sons, having completed a contract to restore (under the direction of Mr. Scott), the eastern portion of this cathedral, the choir, and the towers, have now received orders to proceed with further works in the restoration of the nave and aisles, together with their roofs (which are all covered with lead), and also the requisite timber ceiling of the former.

The City Library and Museum.—We learn from the daily papers that the first stone of the intended New Library and Museum for the City of London, and of which we gave a view and plans not long ago, was laid on Thursday, the 27th ult.

Pier for Coatham, near Darlington.—A meeting of the promoters of the new promenade pier at Coatham has been held at the Lobster Hotel, when it was unanimously decided to proceed with the formation of a company for the purpose of carrying this pier into execution forthwith. The sum of 3,000*l.* was subscribed, and further promises made will considerably increase this amount. The capital is to be 7,000*l.*, the engineers being Mr. John Fowler, C.E., Stockton-on-Tees, and Mr. C. J. Adams, Stockton and Coatham.

Instruction in Science for Women.—We would direct attention to the lectures on the Elements of Physical Science about to be given in the Theatre of the South Kensington Museum, by Professors Huxley, Guthrie, and Oliver, commencing on the 9th of November, at eleven in the morning. An advanced course will be commenced on the 15th, and the first of six on the Clavecin and Pianoforte, by Mr. Ernst Pauer, will be delivered on the 16th, in the afternoon.

Metropolitan Board of Works Contracts. A correspondent again objects that the Board do not send lists of the amounts of tenders to each competitor. He writes,—"In the case of sewer or road contracts the amounts are generally read out in open court, but in the case of the fire-engines stations, the contracts being settled in committee, the result to the contractors is not in any way made known."

TENDERS.

For new chapel and schools, Heywood-street, Manchester. Mr. Richard Owens, architect. Quantities by Mr. Crowcroft:—

Thomson (City-road)	£2,636 0 0
Tickell	2,581 0 0
Jones	2,494 0 0
Davidson	2,460 0 0
Todd	2,439 0 0
Foggett	2,431 0 0
Parry	2,398 0 0
Davies & Mawdsley	2,369 0 0
Heard & Esddie	2,355 0 0
Thomson (York-street)*	2,327 0 0

* Accepted.

For stone staircase, vaults, &c., in rear of Nos. 301 and 302, Strand. Mr. J. H. Rowley, architect. Quantities supplied by Mr. T. T. Green:—

Thompson	£1,645 0 0
Snowdon	1,446 0 0
Merritt & Ashby	1,438 0 0
Crabb & Vaughan	1,414 0 0
Henshaw	1,395 0 0
Brass	1,392 0 0
King & Sons	1,379 0 0
Kelly, Brothers	1,373 0 0
Scrivener & Waite	1,353 0 0
Colls & Sons	1,286 0 0
Sharpington & Cole (accepted)	1,280 0 0

For St. Philip's Schools, Arlington-square. Mr. Gough, architect. Quantities supplied:—

Cohen	£3,350 0 0
Jackson & Shaw	2,946 0 0
Marwick & Thurgood	2,886 0 0
Crabb & Vaughan	2,842 0 0
Chappell	2,799 0 0
Snowball	2,774 0 0
Rolland	2,767 0 0
Wood	2,750 0 0
Colls & Co.	2,723 0 0
Crockett	2,629 0 0
Wright	2,625 0 0
Hill, Keddell, & Co	2,615 0 0
Marion	2,618 0 0
Windship	2,590 0 0
Myers	2,588 0 0
Newman & Mann	2,580 0 0
Cole	2,576 0 0
Bishop	2,545 0 0
Nightingale	2,525 0 0
Hughesdon	2,495 0 0
Henshaw	2,443 0 0
Blease	2,378 0 0
Gibbs & Son	2,339 0 0
Parsons & Telling	2,235 0 0

For shop and stores, Blackfriars, for Messrs. Spiers & Pond. Mr. E. Powell, architect:—

Barrett & Wickerlow	£8,440 0 0
Jackson & Shaw	7,717 0 0
Moreland & Son	7,623 0 0
Turner & Sons	7,541 0 0
Aviss & Roe	7,494 0 0
Merritt & Ashby	7,445 0 0
Brass	7,436 0 0
Colls	7,389 0 0
Nightingale	7,363 0 0
Fish	7,293 0 0
Newman & Mann	7,186 0 0
Browne & Robinson	7,060 0 0
Jewell & Sons	6,986 0 0
Foster	6,927 0 0
Henshaw	6,837 0 0
Condett	6,760 0 0

For alterations and additions at 15, Harrington-square. Mr. J. K. Colling, architect:—

Kelley, Bros.	£605 0 0
Laidlaw	572 0 0
Nash	568 0 0
Mann	565 0 0
Axford	537 0 0
Nightingale	549 0 0
Eyers	548 0 0

For building public rooms at Belvedere, Kent. Mr. A. R. Pite, architect:—

Whiting	£2,194 0 0
Nightingale	1,573 0 0
Cowland	1,540 0 0
Butler	1,489 0 0
Blake	1,470 0 0
Tongue	1,279 0 0

For a new shaft, 100 ft. in height, for the Alum and Ammonia Company, Limited, Hawgood-street, Bow Common. Mr. David Jackson, architect:—

Irons (accepted)	£296 0 0

For a new infirmary, new board-room and offices, and alterations, at the Steyning Union Workhouse, Shoreham, Sussex. Mr. B. H. Nunn, architect. Quantities supplied:—

Burstow & Burfoot	£5,047 0 0
Nadin	3,995 0 0
Bushby	3,961 0 0
J. & A. Stenning	3,922 18 0
Nash & Co.	3,828 0 0
Watson	3,649 0 0
Smith	3,624 0 0
Lockyer	3,560 0 0
J. Chappel	3,494 0 0
Dalby	3,200 0 0
Miles	3,145 0 0
Blackmore (accepted)	3,099 0 0
W. Chappel (withdrawn)	2,799 0 0

For the erection of three shops in High-road, Turnham-green, for Mr. Owen Davies. Mr. E. Monson, jun., architect. Quantities supplied by Mr. Shrubsole:—

Lamb & Son	£1,984 0 0
Stevenson	1,953 0 0
Scholtes	1,687 9 0
Capps & Ritso	1,673 7 0
Harrison & Son	1,590 0 0
Scarlett & Elmer	1,574 0 0
Mansfield	1,563 0 0
Henning & Son	1,545 0 0
Gough	1,496 0 0
Niblett & Son	1,490 0 0
Blick	1,360 0 0
Bysh	1,350 0 0
Barber & Groome	1,329 0 0
J. & R. Whittaker	1,249 0 0
Warr	1,245 0 0
Fanthorpe	1,160 0 0
Too late.	
Day & Beach	1,842 15 4
Nightingale	1,721 0 0
Dover & Co.	1,699 0 0

For the supply of glass cases and plate glass, to be used at the International Exhibition of 1871.

For the Frames.	
Drew	£1,725 15 0
Howard & Sons	1,557 1 5
Smith & Co.	1,467 0 0
Lucas, Bros.	1,446 8 0
Johnstone, Jeanes, & Co.	1,315 6 0
Gillow & Co.	1,271 4 8
Sage	1,176 17 10
Holland & Sons (accepted)	1,167 15 6
For the Glass.	
Thames Plate Glass Company	£512 11 7
Ramsay	428 11 0
London and Manchester Plate Glass Company	411 0 0
Savoy Glass Company	406 14 0
Birmingham Plate Glass Company	400 6 5
Willmore, Brothers (accepted)	384 16 10

For Nos. 8A and 9, St. George's-place, Knightsbridge, for Mrs. General Blake. Mr. G. Legg, architect. Quantities supplied by Mr. Griffiths:—

		Deduct for Bath Stone.
King & Sons	£17,090 0 0	£754 0 0
Mansfield & Price	16,533 0 0	745 0 0
Trollope & Sons	16,263 0 0	769 0 0
Condor	15,644 0 0	654 0 0
Jackson & Shaw	15,500 0 0	860 0 0
Patrick & Son	15,187 0 0	500 0 0
Dove, Bros.	15,075 0 0	475 0 0
Myers & Sons	14,823 0 0	530 0 0
Brass	14,678 0 0	690 0 0
Colls & Sons	14,376 0 0	960 0 0
Hill & Sons*	14,155 0 0	650 0 0

* Accepted.

For the erection of a warehouse to be built in Bell-yard, City-road, St. Luke's. Mr. J. W. Reed, architect:—

Macey	£1,849 0 0
West	1,796 0 0
Hyde	1,779 0 0
Eaton & Chapman	1,622 0 0
Brown	1,480 0 0

For a pair of villas, Hazellville-road, Hornsey-lane, N. Mr. J. W. Reed, architect:—

Peatchcott	£3,036 0 0
Brown & Sons	2,700 0 0
Tully	2,596 0 0
Wright	2,395 0 0
Collingwood	2,344 0 0
Hawkes	2,334 15 0
Poulson	2,296 0 0
Blease	2,284 0 0
Niblett	2,284 0 0
Blackmore & Morley	2,276 0 0
Cooper	2,274 0 0
Tall	2,222 0 0
Chessum	2,095 0 0
Warr	2,020 16 0
Dyne	1,927 0 0
Hoare	1,796 0 0
Luscombe	1,575 0 0

For New Congregational Church at Broadstairs, for the Rev. A. F. Bennett and the Building Committee. Messrs. E. Habershon & Brock, architects:—

Osborne	£1,449 0 0
Nightingale	1,398 0 0
Wilkins & Son	1,351 0 0
Hiller	1,335 0 0
Barwick	1,328 0 0
Starkie	1,270 0 0
Snell & Treyte	1,045 11 0

TO CORRESPONDENTS.

Architectural Art Classes (cancelled; having appeared elsewhere).—J. W. I. N. (Col. Scott, Upper Kensington Gore, W.).—C. (in type).—Ignoramus (see Weale's Treatise on Mathematical Instruments).—G. S. (the price of a book can always be learnt by a note to the publisher).—J. H.—J. & S.—W. C.—F. T. D.—J. & S.—T. W. T.—Mr. C.—J. W.—W. T. P.—J. B.—W. H. W.—C. E.—S. F. C.—J. K.—Messrs. O'C.—J. H. R.—Dr. W.—S.—T. N.—H. H. S.—T. C.—W. M.—R. E. T.—M. Y. F.—F. C. H.—B. H. N.—T. J. H.—H. J.—E. J.—B. T.—S. S.—Col. S.—W. B.—W.—W. W.

All statements of facts, lists of Tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO SUBSCRIBERS.

The Publisher cannot be responsible for TESTIMONIALS *left at the Office in reply to Advertisements, and strongly recommends that* COPIES ONLY *should be sent.*

Advertisements cannot be received for the current week's issue later than **THREE o'clock, p.m.,** *on* THURSDAY.

☞ *NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No.* 1, *York-street, Covent Garden. All other Communications should be addressed to the "Editor," and* NOT *to the "Publisher."*

SPECIAL NOTICE.

In consequence of the Reduction in the Newspaper Postage, Subscribers within the United Kingdom will be supplied with THE BUILDER *direct from the Office, at the rate of Nineteen Shillings per annum,* PAYABLE IN ADVANCE.

ADVERTISEMENTS.

In crown 8vo, with 150 Woodcuts, price 10*s.* 6*d.* cloth.

A RUDIMENTARY MANUAL of ARCHITECTURE: being a Concise History and Explanation of the principal Styles of European Architecture, Ancient, Mediæval and Renaissance; with their chief Variations described and illustrated. To which is appended a Glossary of Technical Terms. By THOMAS MITCHELL, Author of "The Stepping-stone to Architecture."

London: LONGMANS, GREEN, & CO. Paternoster-row.

Just Published, price 3*s.*

THE REPORT of the SEWAGE COMMITTEE of the TOTTENHAM LOCAL BOARD of HEALTH on the DISPOSAL of the SEWAGE of their District. Edited by P. P. MARSHALL, C.E. Surveyor to the Board. E. & F. N. SPON, 48, Charing-cross.

FAIRBAIRN ON IRON AND STEEL.

Third edition, revised and improved, price 10*s.* 6*d.*

IRON: its History, Properties, and Processes of Manufacture. By Sir WILLIAM FAIRBAIRN, Bart. C.E. LL.D. &c. With numerous Illustrations.

CONTENTS.

1. History.
2. Ores.
3. Fuel.
4. Reduction of Ores.
5. Conversion of Crude into Malleable Iron.
6. Mechanical Operations of the Wrought.
7. The Forge
8. Mr. Bessemer's Process.
9. Production of Steel.
10. Strength and Properties of Cast and Wrought Iron and Steel.
11. Armour Plates.
12. Chemical Composition of Iron and Steel.
13. Statistics of Iron Trade.
14. Improvements, 1864—1869.
15. Experimental Researches on the Mechanical Properties of Steel.

Edinburgh: A. & C. BLACK. London: LONGMAN & CO.

TO ARCHITECTS AND SURVEYORS.

DESIGNS PREPARED from ROUGH SKETCHES or otherwise, in the best manner. Perspectives drawn and etched, or tinted. Quantities, billing, and abstracting with accuracy. Terms moderate.—Apply to Mr. MYERS TAYLOR 19, Tavistock-inn, Holborn.

PARTNERSHIP.—An artistic Architect, of some experience in Country Houses, is desirous of PURCHASING a SHARE or PARTNERSHIP in a well-established and prosperous ARCHITECT'S OFFICE.—Address, TRUTH, care of Mr. Tritton, 46, Drummond-street, Euston-square, London.

PARTNERSHIP.—WANTED, by a BUILDER, who has more work in hand than he can manage, an active PARTNER, with a few hundred pounds at command, to assist in the management. None but principals treated with.—Address, with real name, to 435, Office of "The Builder."

FORESTERS' HALL.—To CLERKS of WORKS.—An experienced and competent Man is required, for the above building.—Applications, accompanied by copies of testimonials or references, and stating salary required, to be forwarded at once to Messrs. GEORGE LANSDOWN & POLLARD, 2 & 3, Warwick-street, Coarleg-cross, S.W.

GUILDFORD HIGHWAY DISTRICT.—APPOINTMENT of DISTRICT SURVEYOR.—The Guildford Highway Board are desirous of receiving APPLICATIONS from persons qualified to fill the office of DISTRICT SURVEYOR. The person elected must reside in the district, and devote his whole time to the duties of his office. The district comprises about 175 miles of road, and contains thirteen parishes. Salary 140*l.* per annum. Applications, in the handwriting of the candidate, stating age, present and previous occupation, accompanied by recent testimonials, to be sent to me on or before MONDAY, the 21st NOVEMBER next. Selected candidates will have notice to attend on day of election.

MARK SMALLPEICE, Clerk.

Guildford, 26th October, 1870.

SURVEYOR and INSPECTOR of NUISANCES.—Notice is hereby Given that the Bognor Local Board will, on SATURDAY, the 12th day of NOVEMBER next, APPOINT a SURVEYOR and INSPECTOR of NUISANCES for their District. The person appointed will be required to prepare plans and specifications of all sea defence and other works that may be required, and superintend the execution of such works, see that the sea defences, gas lamps, and other property of the Board are kept in good repair, inspect the district as Inspector of Nuisances periodically, attend all Board Meetings, and perform all the other duties of Surveyor and Inspector of Nuisances according to the Board's byelaws. The salary will not exceed 100*l.* per annum. Applications from candidates, stating age, salary required, and particulars of former engagements, and enclosing testimonials must be delivered at the Office of the Local Board before FIVE p.m. on the said 12th day of NOVEMBER.—By order of the Local Board,

(FREDERICK ELKINS, Clerk.

Bognor, Sussex, 22nd October, 1870.

ASHTON & GREEN

(LATE A. A. ROBINSON & CO.),

14 & 15, BURY STREET, ST. MARY AXE, LONDON, E.C.

SLATE AND IRON MERCHANTS,

Importers and Manufacturers of MARBLE and Enamelled Slate CHIMNEY PIECES, Stoves, Ranges, Kitcheners, and every description of Marble and Slate Masonry.

SLATE SLABS.—Sanded, Planed, and Self-faced, in all Sizes and Thicknesses, varying from 1 foot to 12 feet long and 1 foot to 6 feet wide, and Manufactured into the following Articles, viz.:—Cisterns for Houses, Factories, Breweries, and Papermakers' Vats; Lavatories, Urinals, Pickling Troughs, Ships' Galley-floors, Bagatelle and Billiard Tables, Bins for Wine or Beer Cellars, Shelving for Green or Hot Houses, Dairies, Pantries, Larders, Stores, and Stables; Chimney-pieces, Hearths, Paving, Steps and Risers, and many other useful articles.

ENAMELLED SLATE.—Chimney-pieces, Urinals, Lavatories, Baths, and Facia Slabs, and Inscription Tablets, Hall and Refreshment Table Tops, Chess-boards, Loo, Console, and Dressing Tables, &c.

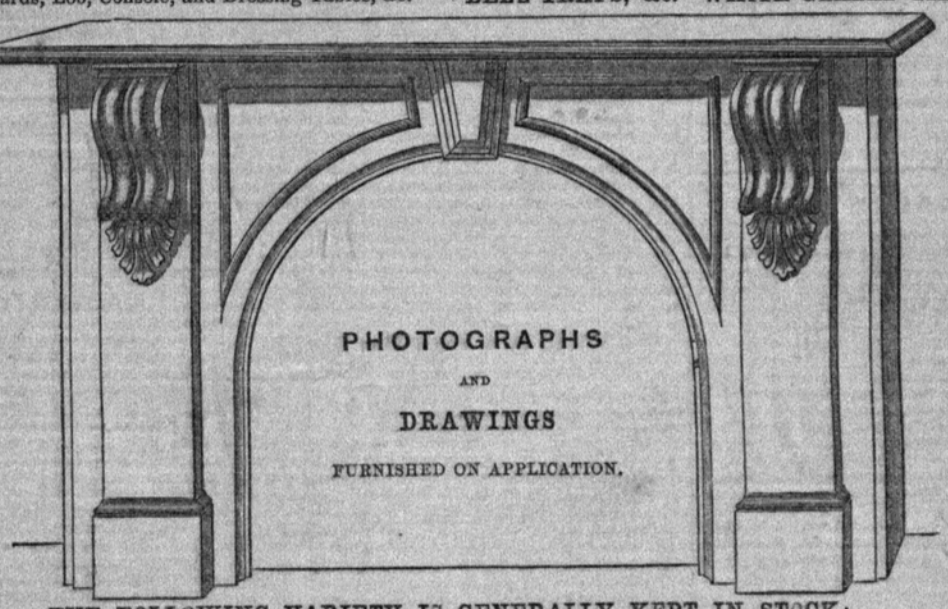
ROOFING SLATES.—All the Quarried Sizes and Colours,—Blues Purple, Red, and Green, of several Shades.

RIDGING.—Slate of various Sizes, with and without Roll, and also with Galvanised Cast-iron Cresting, TERRO-METALLIC, Blue and Red, Plain and Roll, and Crested, in numerous designs and pitches.

EARTHENWARE AND BRASS SANITARY FITTINGS.—Urinal Pan Basins, Angular Bedford Cradles, Flat Wall Bedfords, of various Sizes and Patterns, with and without Lips. Basins, Circular, Angular, and Square, and many others of the ordinary Stock Sizes. Brass Fittings, Spindle Valves, Round Closet Valves, Wastes and Washers, Connecting Screws, Draw-off Cocks, Ring Washers & Plugs.

BELL TRAPS, &c. WHITE GLAZED TILES.

MARBLE CHIMNEY PIECES of Every Kind, Style, and Price, suitable for Cottage or Mansion.

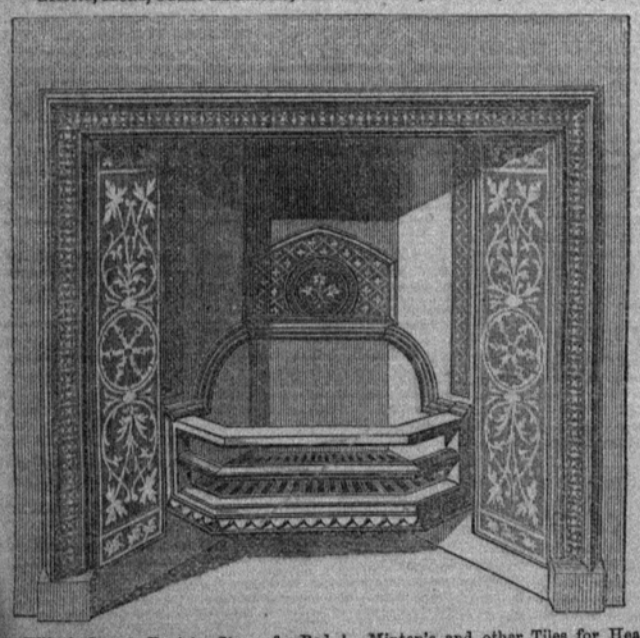


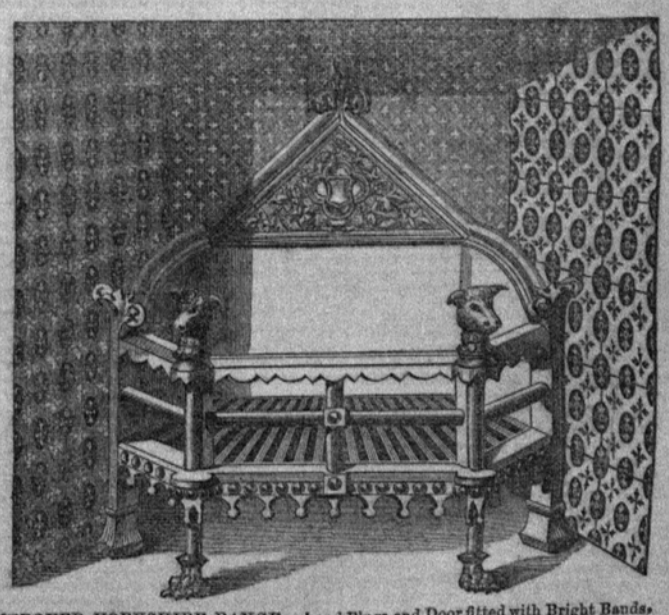
Enamelled Slate CHIMNEY PIECES are produced in imitations of the Choicest and most rare Marbles and Inlay Work.

THE FOLLOWING VARIETY IS GENERALLY KEPT IN STOCK:—

MARBLES.—Sicilian, White Vein, Rouge, Blue Belge, St. Ann's, Black, Brown Brocatelle, Spanish Brocatelle, Vert Morin, Rose de Castille, Italian Griotte, Mona, Jaune Lamartine, Black and Gold, Blanc P., and Statuary.

ENAMELLED SLATE.—Egyptian Green, Griotte, Lumachelle, Rosa Antique, Belgian Grey, St. Ann's, Black, Swedish and Purple Porphyries Granites, Serpentine, &c. &c.





Elliptic Stoves, Register Stoves for Bedrooms, Berlin Black Registers, with and without Bright Beads, Bright and Ormolu Registers, Berlin Black and Bright Gothic Grates, Tile Grates, Dog Grates, Fenders, Fireirons, Coal Vases, &c.

Minton's and other Tiles for Hearths, Rain-water Goods, Sash-weights, &c.

Cottage Ranges, Self-acting Ranges, Cottage Kitcheners, Builders' Kitcheners, Villa Kitcheners, Club Kitcheners, and the IMPROVED YORKSHIRE RANGE, fitted with large wrought-iron Oven, with Hot Plate, Bright wrought Fall Bar, and Bright wrought Fall Crow over Fire, Draw Grate with wrought hinged Dripping-pan Stand & Back, Hot Hearth with loose Rings and Plugs, and Door fitted with Bright Bands, Bright Gridiron and Standard or Grilling Stove in place of Hot Hearth, with Side and Back Recessed Covings and Arched Smoke Plate, with enclosed Top Cover, and large wrought-iron Boiler, for bath and kitchen use.

ARCHITECTS, BUILDERS, IRONMONGERS, UPHOLSTERERS, and SHIPPERS are respectfully invited to INSPECT the SHOOW-ROMS, where over 1,000 Chimney-pieces are on Show and in Stock, fitted with suitable Stoves, Fenders, Tile Hearths, Fire-irons, &c. *en suite*, prices of which will be found to compare most favourably with any House in the Trade. Sheets of Drawings and Price-list will be forwarded on receipt of Trade-card.

Works, BOW BRIDGE, STRATFORD. Home and Shipping Wharf, VICTORIA (London) DOCKS.

Offices and Show-rooms, 14 & 15, BURY STREET, ST. MARY AXE, LONDON, E.C.

BURY STREET is most centrally situated in the heart of the City, within five minutes' walk of Broad-street, Moorgate-street, Fenchurch-street, *Bishopsgate-street, and Cannon street Railway Stations.* All Communications to be addressed,

ASHTON & GREEN, 14 & 15, BURY STREET, ST. MARY AXE, LONDON, E.C.

RESIDENT PUPIL.—A CIVIL ENGINEER, residing near London, has a VACANCY for a RESIDENT PUPIL, who will have the opportunity of acquiring a practical knowledge of drainage and sanitary work, road-making, surveying, levelling, &c. Mr. Phillips, of Swansea, is requested to communicate address.—Address, S. E. Office of "The Builder."

VACANCY for a YOUTH.—Good writer, quick at accounts, and can trace. Age 14 to 17. Work-hop hours.—Apply to T. ⁂, TRUSS, C.E. Iron Merchant, &c. Friar-street, Southwark Bridge-road.

WANTED, a Man who thoroughly understands ENAMELLING SLATE CHIMNEY-PIECES.—Address, by letter, A. B. Mr. G. White's, Printer, 2, Britten-terrace, King's-road, Chelsea.

WANTED (of a steady character), a GENERAL ASSISTANT and GOTHIC DRAUGHTSMAN, well up in detail, at 30s. per week, for a permanency, to a suitable gentleman.—Address, G. SMITH, Architect, 2, Portland-villa, Ross.

WANTED, by an ARCHITECT, an experienced MANAGING ASSISTANT, in a provincial city, to Conduct a Large General PRACTICE.—Address, by letter only, stating age, terms, and full particulars, to X. Y. Z. care of Mr. Batsford, 52, High Holborn, London, W.C. Replies and return of testimonials not guaranteed.

TO ARCHITECTS' ASSISTANTS.

WANTED, a thoroughly efficient ASSISTANT.—Apply to FLOCKTON & ABBOTT, Architects and Surveyors, Sheffield.

WANTED, by an ARTIST and DRAUGHTSMAN of ability (an Exhibitor), EMPLOYMENT to Execute from Rough Sketches or otherwise, Drawings of Machinery, Metal-work, Ornamental and Architectural Designs, Planning, Landscape, filling-in for architects, and general drawing, at the uniform low rate of 2s. per hour. Drawings of moderate detail accomplished in a couple of hours.—G. P. NORMAN, Draughtsman, 18, Appleby-road, Dalston, N.E.

TO ARCHITECTS, AUCTIONEERS, AND SURVEYORS.

WANTED, a RE-ENGAGEMENT, by a Young MAN. Is a neat draughtsman, understands perspective, can prepare drawings from rough sketches, and assist in taking quantities.—Address, S. E. 24, Alfred-street, Westbourne-road, Barnsbury.

TO BUILDERS, CONTRACTORS, &c.

WANTED, a RE-ENGAGEMENT as CLERK and ASSISTANT. Up in book-keeping, estimating, measuring, prime cost, and general jobbing. Could manage in absence of the principal. Good references.—Address, C. A. R. 30, Upper Berkeley-street, Portman-square, W.

TO BRICK AND TILE MANUFACTURERS.

WANTED, a SITUATION, as MANAGER, by a practical Man, at a salary or per 1,000. Sixteen years' character from the last situation.—Address, J. A. Park's Pottery, Lewisham, S.E.

TO MASTER PLUMBERS, BUILDERS, &c.

WANTED, by a Young Man, a SITUATION or JOB, as thoroughly practical PLUMBER. Well up in all branches.—Address, W. C. W. 19, Huntsworth-terrace, Edgware-road.

WANTED, by the Advertiser, to take PLASTERING, by the piece. Labour only. No objection to take charge of a job. Town or country.—Address, 466, Office of "The Builder."

WANTED, a RE-ENGAGEMENT, as FOREMAN of BRICKLAYERS, or Brickwork or Cutting by the Piece, in Town or country. Good references.—Address, E. A. 52, Churchill-road, Hackney, N.E.

TO BUILDERS, HOUSE DECORATORS, HOUSE AGENTS, &c.

WANTED, by a Young Man, aged 30, a RE-ENGAGEMENT as FOREMAN, or to Take Charge of a Business. Well up in measuring and estimating. Good experience in writing, graining, and decorating. First-class testimonials from the West-end. Specimens of workmanship can be shown. A Job of Writing or Graining taken. Piecework.—Address, F. B. 20 Caledonia-terrace, King's-road, Chelsea.

TO ARCHITECTS.

WANTED, by a first-rate GOTHIC DRAUGHTSMAN, a RE-ENGAGEMENT. Has a thorough knowledge of design and detail, and is well up in perspective. First-class references. — Address, H. G. 30, Clipstone-street, Fitzroy-square, W.

TO BUILDERS, &c.

WANTED, a SITUATION, or JOB, by a good Plumber, Gas, and Hot-water Fitter. Can do zinc work, bell-hanging, &c. Would not object to piecework, if required. Labour only.—Address, A. B 8, Shakspeare-terrace, Upper Holloway.

WANTED, a SITUATION, as GENERAL or OUT-DOOR FOREMAN. Carpenter and joiner by trade. Thoroughly well up in all branches of the building trade, having been foreman on some of the largest jobs in England, and used to the management of large numbers of workmen. Can have first-class references from employers and architects.—Address, A. B. 46, Alma-street, Liverpool.

WANTED, a SITUATION, as PLUMBER. Painting and glazing if required.—Address, E. S. 53, Elgin-terrace, Maida-vale, Kilburn.

WANTED, a SITUATION as BUILDER'S FOREMAN, by a thoroughly practical Man. Carpenter and joiner. Has had great experience in all branches of the building trade. Competent to measure up work, and make out working drawings; or would take work by contract, labour only. Town or country. First-class references.—Address, 413, Office of "The Builder."

WANTED, a RE-ENGAGEMENT, by a thoroughly practical WORKING SHOP FOREMAN. Well up in Gothic and staircase work. Holds a first-class system of working a shop of joiners in connexion with machinery; or would take the work of a shop at a schedule of prices. Good references.—Address, 392, Office of "The Builder."

TO BUILDERS, DECORATORS, &c.

WANTED, a SITUATION or JOB, by a GRAINER, PAINTER, and PAPERHANGER.—Address, J. A. 10, George-street, Grosvenor-square.

WANTED, by a young Architect, an ENGAGEMENT as ASSISTANT. Is well up in office routine, surveying, plans, detail drawings, &c. Salary not so much an object as employment in a first-class office.—Address, J. E. T. Bramley House, Nottingham.

TO BUILDERS AND CONTRACTORS.

WANTED, an ENGAGEMENT, in a BUILDER'S Office, by the Advertiser, who is well versed in Builders' accounts, measuring, and estimating.—Address, 443, Office of "The Builder."

TO BUILDERS AND SURVEYORS.

WANTED, an ENGAGEMENT, by a SURVEYOR'S ASSISTANT, aged 29. Thoroughly efficient measurer; practically experienced in building works; well up in all the duties of a measurer. Can be well recommended. Terms moderate.—Address, H. T. care of Housekeeper, 10, Lincoln's-inn-fields, W.C.

TO PLUMBERS AND BUILDERS.

WANTED, by the Advertiser, a SITUATION as IMPROVER to the PLUMBING.—Address, 449, Office of "The Builder."

WANTED, a SITUATION, in a Builder's, Architect's, and Surveyor's Office, by a Youth, aged 15, well educated. Good references.—Address, G. S. 9, Northumberland-street, Strand.

TO ARCHITECTS AND SURVEYORS.

WANTED, by an Architect, an ENGAGEMENT as MANAGING ASSISTANT. Fully qualified in all branches of the profession, from an experience of nineteen years.—Address, A. B. Post-office, 116, Camden-road, N.W.

WANTED, by a respectable Young Man, a SITUATION in a BUILDER'S or CONTRACTOR'S Office, or as TIMEKEEPER (Joiner by trade), who would be willing to fill up his time at the bench. Has a knowledge of drawing. Non-society man. Aged 23.—Address, WM. H. ASHTON, 13, Barque-terrace, Cubit-town, Poplar, E.

TO BUILDERS AND OTHERS.

WANTED, EMPLOYMENT, as GAS-FITTER and BELL-HANGER, or can work at the forge, if required, or will take work by the piece.—Address, E. W. No. 7, Hill-street, Knightsbridge.

TO ARCHITECTS.

WANTED, an ENGAGEMENT, as ASSISTANT. Accustomed to prepare finished, working, and detail drawings, specifications, to design, survey, &c. Is well up in construction, and has had the management of an office for some time.—Address, ARCHITECT, Mr. Robertson, 95, Upper-street, Islington.

TO BUILDERS AND ARCHITECTS.

WANTED, a RE-ENGAGEMENT, as ASSISTANT. Well up in quantities, measuring, book-keeping, tracing, drawing, &c. Good references. Salary moderate. Address, E. B. Herbert House, Mile-end, Portsmouth.

TO BRICKMAKERS.

WANTED, by a Young Man, a SITUATION as CLERK and FOREMAN in a Brickfield. Can be highly recommended by the firm he is about leaving, where he has been five years.—Address, G. J. 16, Ossory-crescent, Camden-road.

WANTED, by a Young Man (aged 21), a SITUATION in a BUILDER'S or SURVEYOR'S office. Can trace plans, take out quantities, is thoroughly up to book-keeping, writes a good hand, and has had practical experience of the building trade. First-class references given. Only moderate salary required.—Address, No. 322, Office of "The Builder."

TO ARCHITECTS, &c.

WANTED, by the Advertiser (a neat and quick DRAUGHTSMAN), a RE-ENGAGEMENT in an Architect's office, temporary or otherwise.—Address, W. D. care of Mr. Durham, 103, Manor-street, Chelsea, S.W.

WANTED, by a YOUTH, a SITUATION, with an ARCHITECT, SURVEYOR, or BUILDER. Has a knowledge of land surveying and measuring artificers' work. Can assist with plans, specifications, and the duties of an office.—Address, H. CHAMBERLAIN, Colby Lodge, near Begelly, R. S. O. South Wales.

TO BUILDERS.

WANTED, by the Advertiser, a Joiner by trade, a RE-ENGAGEMENT, as SHOP-FOREMAN. Accustomed to all kinds of machinery in the building trade, thoroughly competent in making out working drawings, &c.—Address, A. B. 123, Warwick-street, Pimlico, S.W.

TO PLUMBERS AND DECORATORS.

WANTED, a constant SITUATION, as HANDY MAN, at Plumbing, Painting, Glazing, &c. Useful to an owner of a lot of houses or small master. Can repair roofs, drains, &c.—Address, J. W. 18, Hatcham-terrace, Hatcham-road, Old Kent-road.

WANTED, a RE-ENGAGEMENT, by a thoroughly practical GENERAL OUT-DOOR FOREMAN. Carpenter and joiner by trade. First-class references.—Address, 431, Office of "The Builder."

WANTED, in a Contractor's or Builder's Office, an ENGAGEMENT, by an experienced CLERK, of twenty-five years' standing. Fully qualified in the whole routine of official duties. Terms moderate.—Address, A. 18, Warren-street, Pentonville.

TO SURVEYORS, LAND AGENTS, AND BUILDERS.

WANTED, a RE-ENGAGEMENT, by a practical Man. Well acquainted with the building. Is a good designer, draughtsman, measurer, and quantity taker.—Address, SQUARE, Mr. Harvey, Bootmaker, High-street, Watford.

WANTED, a SITUATION, as a Constancy, by a THREE-BRANCH HAND—Plumber, Painter, and Gasfitter. Town or country.—Address, I. F. 149, Great Portland-street, W.

WANTED, a RE-ENGAGEMENT, by a thoroughly practical and efficient FOREMAN, to Take the Entire Charge of a Job, or Working Foreman of Carpenters and Joiners. Aged 38. Good references.—Address, M. M. 41, Belvedere-road, Lambeth, London.

WANTED, an ENGAGEMENT, by a first-rate DRAUGHTSMAN. Accustomed to prepare finished, working, and detail drawings. Well up in construction and perspective. Fifteen years' experience.—Address, No. 417, Office of "The Builder."

WANTED, by a Young Man, a SITUATION as an IMPROVER to the Carpentering and Joinering. Understands inside and outside blind-making. Town or country.—Address, Z. H. 14, Annerley-street, Culvert-road, Battersea Park.

WANTED, a RE-ENGAGEMENT, as WORKING SHOP FOREMAN of JOINERS, or as General Out-door Foreman, by a thorough, practical joiner and staircase hand. Age 33. Good draughtsman, and well up in setting out all kinds of work. Well up in machinery and piecework. First-class reference from London firm.—Address, H. E. 10, Aldenham-street, Somers Town, N.W.

TO BUILDERS.

WANTED, a RE-ENGAGEMENT, as SHOP FOREMAN of JOINERS, by a thoroughly practical and experienced Joiner. Age 40. Well up in setting out every description of work, and well acquainted with the system of working machinery.—Address, T. M. No. 2, Alfred-street, Roman-road Barnsbury, N.

TO BUILDERS AND HOUSE DECORATORS.

WANTED, for a constancy, a SITUATION by a thoroughly good GRAINER, Writer, Paperhanger, and Ornamental Decorator. Can be well recommended by his late employer, who is parting with him solely through slackness of trade. Apply, by letter only, to A. B. 53, Mortimer-street, Cavendish-square, W.

TO BUILDERS.

WANTED, by the Advertiser, a three years' Agreement for IMPROVEMENT as a CARPENTER and JOINER. Has had six years' experience. Willing to work the above time at 20s. per week. Aged 23.—Address, J. H. 23, St. Thomas's road, Finsbury Park, Holloway, N.

TO BUILDERS, &c.

WANTED, PLASTERING (piece-work), by a practical Man. Is well experienced in taking plastering to any amount. Town or country. Labour only.—Address, 734, Office of "The Builder."

WANTED, by a first-class PLUMBER, PAINTER, LEAD and SASH GLAZIER, PAPERHANGER, &c. a CONSTANCY or JOB. Seven years' references.—Address, S. H. care of Mr. Lawrence, 10, Great Trinity-lane, Cannon-street, City.

WANTED, by a Young Man, aged 22, a SITUATION as JUNIOR CLERK in a BUILDER'S Office. Thoroughly understands measuring in all its branches, having been in the business for the last six years. Can trace well, and is a very fair draughtsman. Wages moderate. Good reference.—Apply, by letter, to A. B. 8, Virginia-street, near Clapham-road Station.

WANTED, EMPLOYMENT, as Jobbing PLUMBER and ZINC WORKER. Can fill up time in painting. Town or country.—Address, J. A. 13, Hatton-street, Maida-hill.

TO ARCHITECTS AND SURVEYORS.

THE Advertiser, who has practised and has acted as SUPERINTENDENT of WORKS, wishes for an ENGAGEMENT. Experienced in quantities.—Address, ARCHITECT, 1, Great Queen-street, Westminster.

TO CONTRACTORS AND BUILDERS.

TEMPORARY ENGAGEMENT, or otherwise, WANTED, by a thoroughly practical Surveyor, good estimator, casurer, and valuer, with full knowledge of London prices. Provinces not objected to. References given. Terms reasonable.—Address, SURVEYOR, 25, Thornton-street, Brixton-road, S.W.

TO BUILDERS AND CONTRACTORS.

TIMEKEEPER, YARD or WHARF FOREMAN.—A young Married Man seeks an ENGAGEMENT in either of the above capacities. Home or abroad. Is well versed in the duties.—Address, 430, Office of "The Builder."

TO CONTRACTORS.

TIMEKEEPER, CLERK, &c.—The Advertiser requires a SITUATION as above. Has had several years' experience. First-class testimonials and references.—Address, CLERK, 11, Crown-street, Brighton.

RE-ENGAGEMENT WANTED, by an efficient BUILDER'S CLERK and MANAGER, well versed in measuring-up works and estimating, making out accounts, prime-cost, &c. References, &c. first-class.—Address, 418, Office of "The Builder."

TO ARCHITECTS SURVEYORS, AND BUILDERS.

ENGAGEMENT, temporary, or three or four days a-week, WANTED, in town or country, by a first-class Quantity Taker, Measurer, and Draughtsman. Aged 30. First-class testimonials. Terms, 12s. 6d. per day.—Address, A. B. Z. News-rooms, 24, King William-street, Strand.

TO STONE MERCHANTS, CONTRACTORS, AND BUILDERS.

EMPLOYMENT WANTED, as CLERK, COLLECTOR, or TIMEKEEPER. Conversant with stone-work, book-keeping, and slight knowledge of drawing. Aged 21.—Address, ALPHA, 17, Praed-street, Paddington.

TO BUILDERS, CONTRACTORS, AND OTHERS.

A SURVEYOR, of long experience, requires a RE-ENGAGEMENT, as MEASURING UP and ESTIMATING CLERK, or to SUPERINTEND the CONSTRUCTION of WORKS.—Address, H. W. 10, New North-street, Red Lion-square, London.

TO ARCHITECTS AND SURVEYORS.

A SENIOR ASSISTANT, aged 37, is open to an ENGAGEMENT. Well acquainted with general and perspective drawing, details of construction, preparing specifications and quantities, superintending works, &c.—Address, ALPHA, 92, Arthur-road North, Brixton.

TO ARCHITECTS AND SURVEYORS.

A GENTLEMAN will shortly be DISENGAGED. Can prepare all necessary finished and working drawings, details, perspective, levels, survey, take out quantities, estimate, measure up, and superintend work.—Address, 448, Office of "The Builder."

TO TIMBER MERCHANTS, BUILDERS, &c.

A YARDMAN, TIMEKEEPER, CLERK, &c. by a young married Man (age 28), Carpenter. Willing to work at bench if required. Can get out rough plans. Well acquainted with measuring of hard timber. Wages, winter, 24s.; summer, 27s. References if required.—Address, T. M. F. West Tarring, Worthing.

TO BUILDERS AND OTHERS.

A S WORKING FOREMAN of CARPENTERS, or open to take piece-work.—Address, T. S. 2, Lott's row, Ashburnham Estate, Chelsea, S.W.

TO ARCHITECTS.

A GOOD and expeditious DRAUGHTSMAN, who is perfectly capable of getting up working and finished drawings, perspectives, &c. is a good colourist, and understands the routine of an office, is desirous of meeting with an ENGAGEMENT. Terms moderate.—Address, C. R. 22, Wharton-street, W.C.

AS CLERK of WORKS, or as TRAVELLER, COLLECTOR, &c.—WANTED, an ENGAGEMENT as above, by a highly-respectable Tradesman of thorough business habits. A joiner by trade. Remuneration secondary, having a small income.—Address, W. care of Mr. J. B. Colwill, at Messrs. Patman & Fotheringham's, Builders, 68, Theobalds-road.

TO ARCHITECTS.

AS PRINCIPAL ASSISTANT. A Gentleman, who has occupied for some years a responsible position as leading CLERK in London firms, and latterly in the office of an Architect in the Midland Counties, in good practice, is open to a similar Engagement in Town or the neighbourhood. Terms, 150l.—Address, B. B. B. 35, Wigmore-street, Cavendish-square, W.

TO ARCHITECTS AND CIVIL ENGINEERS.

AN ASSISTANT, of many years' experience in office and on works, desires a RE-ENGAGEMENT. Can take charge of an office, or the management of a branch practice. Testimonials, references, and terms.—Address, W. 15, Rutland-road, South Hackney, N.E.

The Builder.

VOL. XXVIII.—No. 1449.

A Review of Architectural Progress.

T the opening meeting of the Royal Institute of British Architects, held on Monday evening last, the president, Mr. T. H. Wyatt, delivered an interesting and valuable address. With the exception of the introductory portion, referring to the progress and condition of the Institute, we print the whole of it:—

At this moment there are, I believe, in existence no less than eight societies, all more or less associated with objects connected with architecture and kindred to our own:—

1. The Institute.
2. The Architectural Association.
3. The Architectural Alliance.
4. The Architectural Museum.
5. The Architectural Exhibition.
6. The Architectural Benevolent Institution.
7. The Architectural Publication Society.
8. Architectural Art Classes.

Now, if subdivision weakens; if a stream diverted into half a dozen different channels takes from the power of the original current; and if "union is strength," would it not be wiser and probably more successful if all these societies, working for ends tending to advance and benefit one profession, could be united and worked, if not under one management, at least, as one society, one powerful body? I am not the first of your presidents who has felt that some effort might be made in this direction with advantage; and though I am probably treading on delicate ground, I cannot help feeling that it would only require time, patience, and tact to realise a good deal of the object I have in view.

When a benevolent society was sought to be established by the Institution of Civil Engineers, it was not left to the individual action of one or two zealous and kind-hearted members only, as it was with ours. The matter was taken up by the council of the Institution, and a sum of 23,000*l.* was raised in a few weeks, and its funds are administered by a committee of seven subscribers, of whom the president and two members of council are *ex-officio* members.

I am ashamed to confess that I do not know whether any attempts have hitherto been made to realise these objects, beyond those alluded to by Mr. Beresford Hope, with reference to the "Architectural Museum," but I cannot think there should be any serious obstacle to the union of three societies like the Institute, the Architectural Association, and the Architectural Alliance, whose objects are so similar, if the union were approached in a spirit of conciliation and mutual trust. This junction being realised, and suitable premises being obtained, the five societies last named might naturally find their home under one roof.

The Institute, consisting of 624 members, was founded "for the general advancement of civil architecture, and for promoting and facilitating the acquirement of the knowledge of the various arts and sciences connected therewith."

The Architectural Association consists of 550 members, engaged professionally in the study or practice of architecture, and of those interested in the various arts and sciences connected therewith, the Association dwelling specially on the importance and necessity of a more complete and systematic education of architectural students.

The objects of the Architectural Alliance, established about 1862, are to promote unity of action and good feeling throughout the country at large, and to aid in improving all matters connected with professional practice, such as competitions, unity of professional charges, contracts and agreements with builders, &c. The Alliance now includes nine or ten other metropolitan and country societies, and appears to be in full action.

Here then are objects, surely, most closely united,—the "Association" devoting its great and careful energies principally to the education of the students of architecture; and how successful their energies have been, and how deep an interest is taken by the younger members of our profession, by our assistants, and by the pupils of London offices, is shown by the fact that, in the last year, 103 new members have joined the "Association."

Whilst on the subject of "unity of action," let me say a few words on the desirableness of that unity in the most comprehensive way and in all that affects our professional action: we have established a code of charges which is accepted generally by the profession throughout the kingdom as equitable and as its guide, and which has been recognised by some of the courts of law as fairly binding on employers and employed. Why should we not lay down one to be our guide in all matters of competition (since competitions, in spite of their many inconsistent and unjust results, will probably still be reverted to)? Why not seek to aid, by the power and influence of the Institute, the laudable exertions which have for some time past been made in this direction by the Architectural Alliance? Why not seek to form amongst ourselves a court of appeal for all questions of professional etiquette and conduct? Why not agree to certain general conditions of contract which may be recommended to the profession by the Institute as proving an equitable basis of contract between our employers and the builders engaged in their works? Your council has had frequent meetings and discussions with the committee of the Builders' Society, and has agreed upon certain general headings for conditions of contract between employers and employed, which it thinks equitable and which will shortly be submitted to a general meeting of the Institute for approval and adoption. They have been approved by the committee of the Builders' Society, and I am informed that all the tenders lately submitted for the great work at the Government Offices, were made on the understanding that these general conditions formed the basis of their contract. I am glad to find that my predecessor, Sir William Tite, sanctioned with his experience the equity of having a reference or appeal from the decision of the architect on some points, though not, of course, on questions affecting the quality of the work or of the materials. The absolute power often claimed by some engineers and architects, of deciding all questions connected with the contract, and its intentions even, appears to me contrary to every principle of equity; and though some may still cling to such powers, we have abundant proofs how painfully, and yet how ineffectually, such powers work. We can all remember the lingering years of litigation and expense connected with the great case of Mackintosh *v.* The Great Western Railway Company, in which Mr. Brunel's decisions were disputed. The case of Smith & Knight *v.* Penarth Dock Company has been for years before the courts, and is now hung up in Chancery in spite of Mr. Hawkshaw's powers under the contract, and Mr. McClean has been equally powerless to enforce his award in the case of Hill *v.* The South Staffordshire Railway, though his powers of decision appeared unlimited: this case has now been fourteen years in litigation. I believe that many engineers of the highest position are now in the habit of introducing arbitration clauses in their contracts, and that it is by no means unusual to nominate the president of the Institution of Civil Engineers for the time being as the arbitrator between the engineer and contractor engaged on the work, or leaving it to him to nominate the arbitrator, an arrangement sanctioned by the solicitors of the various public bodies interested.

And, may I ask why there should not be one General Building Act applicable to all towns in England with a certain population (and with powers to enforce the provision of the Act), instead of having upwards of 200 corporations and local boards to introduce varied and conflicting regulations, involving much uncertainty, and sometimes unnecessary trouble to the architect practising much in the country? The Town Council of Liverpool has postponed any amendment in its local Act, in the hope that Government may introduce one general Act. It surely would not be impossible to arrange one Building Act which should be sufficiently broad and comprehensive to meet the various conditions of materials and local customs, and sufficiently elastic to admit of the introduction of novel materials or of improved modes of construction.

If the vision I have indulged in of a real alliance amongst all those bodies is too visionary and hopeless, then, at least, let us have mutual sympathy and respect, and, as far as possible, co-operation. The success of any one of these bodies must aid in the great work we have all in view. The education and advancement of the architectural student and pupil is an object of as great moment to the architect as it must be to the interests of society. The formation of a student class by the Institute itself; the institution of Architectural Professorships at King's College and the London University; the various classes and courses instituted by the Architectural Association; the establishment of a voluntary architectural examination; the Soane Medallion; the Travelling Studentship of the Royal Academy; the Pugin Travelling Studentship; all offer benefits to the architectural student and pupil of the present day to which we of a passing generation were strangers. They are to be largely congratulated on such advantages, and I trust there is little doubt that the future of our profession will proportionately bring forth fruit. What such opportunities are doing for the *professional* student, for him who will hereafter have to earn his bread by his own hand and head, the establishment of the Fine Art Professorships at Oxford and Cambridge will, I hope, do for those studying in the Universities, and who from wealth and position naturally form the principal class of the architect's future employers. Hitherto, the region of art in any shape was, if not repudiated in the Universities, at least ignored; and I am sure there are many who will bear me out in the assertion that some of our greatest professional difficulties and discouragements have arisen from a want of knowledge and sympathy with architecture itself, or with the other arts so intimately bound up with it amongst some of our employers. How, then, is this drawback to be met? Not by attempting to teach the non-professional world the details of design and construction, but by inducing all teachers to make the study of architectural history in its general features a portion of all liberal education. The history of the growth of architecture, like that of the other arts, is, in fact, an essential element in the history of civilisation and enlightenment, and is necessary to the formation of the thoroughly educated mind. The creation of each architectural style or period has been the result of the religious, political, and social ideas, and of the mechanical appliances of the period which gave it birth. In every age which has produced a true style of its own, the principles of this creation have been the same, though the details and constructive forms may have differed, and it is just the knowledge of these principles of sound art, whether of architecture, painting, or sculpture, which it is desirable to teach the employer—the non-professional student. The study of architectural forms is thus a necessary element in the study of the history of the most civilised races of the world. The study of the literature of any nation is only one element in the acquisition of a knowledge of its real life, and to the study of its literature should be added the study of its arts as the expression of that life in visible forms. This, I venture to believe, would be the cure for the apathy and ignorance of some employers in matters of art, and it is as practical as it is urgent.

It may, indeed, be regretted that such studies did not form part of the education of that body of seven noblemen and gentlemen of the highest position in the country, who formed a commission, but a few years ago, to inquire into the deficiencies of the Royal Academy (a society formed to promote the three sister arts of painting, sculpture, and architecture), and who, after sitting for months and hearing abundant evidence of the want of aid or instruction to the architectural pupil, made an elaborate report and various suggestions, but without giving the shortcomings affecting our profession "*one single word of notice or allusion.*" A very distinguished member of that Academy called attention to this fact "as a proof of the little consideration which architecture received in this country at the hands of those from whom it had a right to expect the very highest consideration."

If the Royal Academy, as a body, do not feel the importance of the study of architecture, we

have, at least, on record, the wise and living words of their late president, Sir C. Eastlake, who said,—"Viewed only as an academical study, no pursuit connected with the objects of taste can more fitly recommend itself as an adjunct to a liberal education than a correct knowledge of architecture, and a power of forming a sound judgment on the works of the architect;" but the Royal Academy, like all other public bodies, sooner or later, follows the current of public opinion. Only last week a new school was opened in the rooms of the Royal Academy, specially devoted to the study of architecture. I believe the members of the Academy deserve our thanks for this concession, tardy though it may be; and I think the architectural members of the Academy (with whom, I imagine, the appointment rested) merit especial praise for having selected, as the future master, or director, of this school, our member, Mr. Spiers, whose early career has been so brilliant, and who, from education, power, and zeal, is most admirably qualified to aid and direct the future students. The establishment of these classes ought to be universally known amongst our metropolitan students. Printed regulations and instructions will soon be issued, and I trust that every advantage may be taken of this boon, thus adding another to the several existing opportunities which the architectural student of the present day possesses for perfecting himself in the study of his profession.

Whilst on this subject, it is not easy for an English architect to avoid dwelling on the little encouragement given in this country by its Government to the development and advancement of his profession, or (I was going to say) to the honour of its professors; but I have to remember that lately two of our body have been selected for such honour as the Crown confers on art, and that another member will, it is stated, be similarly complimented.

It has been asked, "Is *Imperialism* necessary for this?" I do not know that it is, but I do know that under Imperial rule in France, in Austria, and in Russia even, far more is done towards such ends than in England, with all its boasted wealth and energy. What marvellous progress has been made in France under the strong will and ambition of its late ruler! an ambition to hand down to posterity his name in connexion with the grandeur and beauty of his metropolis, with the embellishment of the great cities, and the restoration of the great historic monuments of his country; and, though misfortune and reverse are sitting heavily on his later years, his name will, in history, be held in honour for the encouragement he has given to the architecture and art of his great country.

Of the great public buildings in the metropolis now in progress or recently finished, I presume that the following may be classed as "National Works" undertaken by the Government and paid for by the country, viz.:—

1. The Foreign Office (the India Office being paid for from Indian funds) and the Home and Colonial Offices, for which tenders have been lately submitted.
2. The London University Building, in Burlington-gardens.
3. The completion of the South Kensington Buildings, commenced by Captain Fowke.
4. The Rooms for the Learned Societies, in Piccadilly.

The "Albert Memorial," for which so large an amount has been raised by the subscription of individuals, from our Queen downwards; and the "Hall of Arts and Science," which may fairly be classed as a joint-stock undertaking—important and costly works as they may be—can hardly be classed as "national works, undertaken by the Government and paid for by the country."

The "Law Courts," when realised, may, perhaps, come under that denomination, for they have shared the usual fate of Government works—procrastination and indecision, and have been bandied about from one commission or commissioner to another, from site to site, and from architect to architect; but, inasmuch as they will mainly be paid for by a fund which has accumulated from the suitors, I can hardly give Government credit for great liberality or energy in this matter. It has been truly said elsewhere, "This affair of the Law Courts is discreditable to Government. It is an illustration of that special characteristic of British officialism, which puts off everything until public opinion will wait no longer, and then comes forward with crude and shallow propositions, trusting to Providence to bring them to a happy issue, perhaps believing in competitions as a sort of providential arrangement for the development of *unknown genius*." Happily we may at last believe that the site, the plans, and the architect, have been finally decided on, and that in the early spring we shall have evidence of more energetic action than is at present apparent. Let us seek to dismiss from our minds all questions of past dispute or delay. I have no doubt that the proper site has been at last fixed on, and as little, that this great work is in the hands of an accomplished and able artist, from whom we may fairly anticipate a result that will do honour to his name and credit to our profession.

That part of the Government Offices comprising the Foreign and Indian Offices is at last complete, and a new contract has lately been entered into for the completion of another portion, the Home and Colonial Offices. In this great work timidity and indecision seem to have largely prevailed. The prize block plan for laying out the Government Offices (in the competition originated by Sir Benjamin Hall) has been disregarded, the new buildings seem to have no connexion with the other public offices as regards style or position; they have been done piecemeal instead of dealing boldly and at once with the whole group, wasting money in the tenancy and occupation of inconvenient and detached offices now rented at heavy rates, and giving increased value to adjoining properties, which will ultimately have to be purchased.

The London University, in Burlington-gardens, has happily passed out of the category of "unfinished works." I am glad to have this opportunity of expressing my admiration of the way in which Mr. Pennethorne has carried out this work, where parsimony does not seem to have fettered its author, and where he has wisely and liberally brought to his aid the labour of the sculptor. The Institute, by its presentation of a Special Gold Medal to Mr. Pennethorne for his work at Somerset House, has already sought to do him honour. I feel sure there are none who have not heard with pleasure that it is in contemplation by the Sovereign to add to his honours, and thus to mark the sense entertained by Government of the long and faithful services of this gentleman. May he live long to enjoy his repose and his laurels! his professional brethren will not forget the ready aid and courtesy that he always held at their disposal.

The South Kensington buildings and the group in Piccadilly are now making considerable progress, and it will only be right to wait for their completion before offering an opinion as to the result. Few of the passers-by through Piccadilly can be aware of the fact, that within the block of buildings that surround the old court of Burlington House, on three sides there will be housed six important literary and scientific societies and a central post-office,—the Royal, Geological, Chemical, Linnæan, Astronomical, and Antiquarian Societies; all will be accommodated, a sort of *multum in parvo*; and if the distinguished architects who have had to arrange their plans succeed in satisfying all these bodies, they will have accomplished a Herculean task. In two years from this time we may hope to see the completion of this important work, and I trust that the new tenants and the present occupants of Burlington House may long dwell together as a "happy united family."

There seems to be an indifference and apathy on the part of our rulers and our Parliament to aid in adorning the metropolis, or to do for our profession that to which the rulers of Continental States attach such importance. Almost all is left to individual energy and liberality, and a spirit of parsimony reigns over the art administration of this country, as it seems to be doing in many other departments, and yet some allowance should be made for the Government of this representative and independent country. Here, London is but a spot in the political horizon,—a mere atom of the wealth and energy of the kingdom. Manchester, Liverpool, Glasgow, Bolton, and Leeds, all claim their share in the power and government of the State. Not as in France, where Paris is the sun round which all their cities revolve and worship, and for the adornment and glory of which every Frenchman is (or rather was) prepared to make any sacrifice. I cannot better illustrate the difficulty the Chancellor of the Exchequer must feel in dealing with public funds for the adornment of London than in reading an extract from the letter of an accomplished and influential architect practising in one of our largest towns. I had applied to him for aid towards the funds for the restoration of St. Paul's Cathedral. He writes thus:—"I hope the fund for the cathedral will be raised, but Parliament has done so much for London at the cost of the country, that there is not much disposition in the provinces to subscribe for London objects, even when, as in this case, one of national interest. The remark frequently made is, the nation provides London with parks, museums, galleries, and libraries, whilst in Manchester, Liverpool, and other large country towns we have to find them for ourselves. Let the ratepayers of London do as much for themselves as we have to do for ourselves."

If this feeling exists in the mind of an accomplished and educated architect, fully alive to the beauty and influence of architecture, how much stronger must it be in the mere Parliamentary representative, whose popularity is frequently in the inverse ratio to his intelligence and liberality, and with whom the Chancellor of the Exchequer has principally to deal. Thanks, however, to the strong will and generosity of individuals, our generation may, I think, be proud of what it has done and is now doing.

In our metropolis we have, at last, seen realised by the Metropolitan Board of Works a goodly instalment of that grand embankment scheme suggested by Sir Christopher Wren after the fire of 1666. His plan was actually ordered to be carried out by Act of Parliament, 22nd Charles II.; and, though scheme upon scheme, and committee upon committee have advocated and urged its being carried out, it was not until 1862 that it took a definite form, and the Act of the 25th and 26th Victoria has realised that which the Act of 22nd Charles II. failed to do. How ably Mr. Bazalgette has conducted this undertaking needs no praise from me. He has given us a noble work in which beauty and utility go hand in hand. Let us hope that the various vexed questions of "approaches and distribution of vacant spaces" connected with this embankment, may be as successfully dealt with as has been the main work, and that the great pedestals, so evidently left for sculpture, may ere long be properly tenanted.

The Metropolitan Board of Works deserve also the thanks of all who care for the improvement of London, for having accomplished a work much needed, and which has been urged for twenty years, viz.—the removal of Middle-row. In 1865, an Act was obtained, and we are able now to appreciate this boon. Nor has the city of London been backward in the good works of improvement and utility. They have lately realised an admirable meat-market, that has always formed part of the scheme for removing Smithfield. Plans had been prepared at various times, but it was not until 1865 that the design was finally approved, and the present City architect enabled to carry out a work which will associate his name with the history of that corporation which he serves so well.

That body have further taken in hand, and brought to a successful issue, the internal decoration of their Guildhall; they have now in progress, on an important scale worthy of the City, a Museum and Library adjoining the hall, works on which their architect has to be complimented; but the great undertaking of the City authorities, that which has removed a standing disgrace to the City, and added a great beauty to its public ways, is the realisation of the Holborn Viaduct. One of the first advocates of this improvement was Mr. William Grellier, an early member of this Institute, and the author of the design that gained the first prize in the competition for the Royal Exchange. In 1833 he submitted a plan and model; various plans were subsequently submitted by others. In 1848 a scheme was prepared for the City by Mr. Bunning, and in 1859 one by Mr. Marrable was authorised by the Metropolitan Board of Works. If "in a multitude of counsellors there is wisdom," then must the City be held very blameable for having allowed so many plans to drop, and so many years to pass before they ventured on this important work. At last, in 1863, a competition for plans was decided on, and the works were entrusted to the care of the Surveyor of City Sewers, Mr. Heywood. They were commenced in 1863, and completed in 1869, when the Viaduct was opened by the Queen. As most are aware, questions of a delicate nature have arisen as to the equity of that competition, and others even as to the stability of some part of that structure. I will, therefore, only say that we should be thankful for what we have got,—a grand approach to the City, of the merit and stability of which I have, individually, no doubt.

The railway companies have contributed their share in the erection of the two large hotels at Charing Cross and Cannon-street by our member, Mr. Edward Barry; and though last, not least, the Midland Railway Company have called to their aid the services of another distinguished member of our body, and a noble pile of buildings is making rapid progress. I know no instance in this country in which the services of the engineer and architect appear to have been so thoroughly associated or to have realised such a happy result; it is refreshing to see a case in which that almost universal bugbear, economy, has not been allowed to interfere with and mar the whole; and this remark applies also to another great metropolitan work now near completion, certainly the largest and most important hospital that has been built in London on the pavilion principle. It is, I think, a fortunate thing for the importance and improvement of the metropolis that St. Thomas's Hospital has found a resting-place immediately opposite the Houses of Parliament, and that instead of that large river frontage being left to the mercy and the usual independent action of individual builders, or to the uncertainty, which once prevailed, attending the vacant ground adjoining the Northern Embankment, a public building of vast extent and importance, with varied outline and considerable architectural effect, has been realised,—one on which our member, Mr. Currey, has to be congratulated.

If, under the provisions of the "Metropolitan Asylum District Act" the various hospitals and infirmaries building by that Board, and paid for by a rate on the metropolis, cannot in justice to the ratepayers lay claim to *much architectural* pretension or ornament, their arrangements and details will, I trust, be considered satisfactory, and as a proof of the greater care and consideration given in the present day to the wants and ailings of our poorer neighbours. At any rate, it is something for one capital to have built in less than three years two large asylums for the insane poor, each accommodating 1,620 patients, and four hospitals for fever and small-pox cases, capable of treating from 5,000 to 6,000 cases annually, at a cost of nearly half a million of money, all paid for the ratepayers of the metropolitan district.

If the metropolis has been thus busy for the last few years on works of great public benefit and improvement, it cannot be said that the country has been idle. In Glasgow, we have in hand a great university group, not added to bit by bit, but started *ab initio* with unity of plan and purpose, and with such architectural pretensions and importance as its educational purposes legitimately call for. In Oxford, there has been of late and still exists much architectural vitality. In the Exeter College Chapel, the new works at Balliol and at Christ Church, the restoration of the Cathedral, the new Keble College, and the churches of St. Philip and St. James, and of St. Barnabas, all bear testimony to the spirit of munificence of their promoters; and if opinion is divided as to the relative or general merit of all these works, I will venture to say without fear of contradiction, that in each will be found points of beauty and originality well calculated to sustain the high reputation of the eminent men who have been working on them.

In Cambridge, the chapel at St. John's, and the new wing to the library, by Mr. Scott; the new court at Cāius, and the new buildings at Jesus College, by Mr. Waterhouse; the important Whewell buildings at Trinity College, with the museum and library by Mr. Salvin, and the contemplated enlargement of Pembroke College, all prove that Cambridge is not behind her sister university in such work.

If the great universities have felt the value and teaching of beautiful and appropriate public structures, the authorities of some of our great public schools have not been backward in the improvement and adornment of their buildings. The governors of Dulwich College have boldly grappled with the heavy task of erecting an entirely new pile of school building; those who administer the affairs of the Charterhouse have not been less courageous, and a great school establishment of much architectural merit is rapidly making progress at Godalming. At Eton a new chemical theatre and laboratory has been lately erected, showing what progress is making in the due appreciation of a scientific education.

The great seats of commerce and industry have followed in their appreciation of great public buildings. In Manchester a new town-hall on a grand scale and of great architectural importance is just begun, and a new exchange is in progress. In Liverpool a new town-hall and an exchange, with a large pile of public offices, have just been completed. In Rochdale, Bradford, and Belfast new town-halls of great importance are in progress, and at Chester a building of similar purpose has lately been completed.

I fear I have already taxed your patience with allusions even to the few buildings I have mentioned, important as they are, but they are but as drops in the great sea of architectural works now in progress in this country. I have said nothing of the numerous public halls of companies or societies, such as those of the Drapers' Company, the Haberdashers' Company, and the Inner Temple, in London; or of the public buildings undertaken by corporations or counties, such as the public baths at Newcastle, the Philosophical Institution and Library at Bristol, the Assize Courts at Durham, the County Lunatic Asylums building in Berkshire, Lancashire, Yorkshire, Cheshire, and Herefordshire, or of those for boroughs at Ipswich, Leicester, and Beverley; and the Guildhall and municipal buildings at Plymouth.

I have made no allusion to the numerous private mansions of great importance now in progress in various parts of England, or to the great churches spread and spreading broadcast over the land, though there are many of such great merit and novelty as to demand special attention if time did but permit; or to the chapels, monasteries, convents, and synagogues, which are hardly less numerous; or to the schools in towns and rural districts; but I may remind members and those interested in the preservation of our great national treasures, the cathedrals of England and Wales, that at this moment there are very few that have not received, or are not receiving, careful and tender restoration or reparation, for which, within the last few years, several hundred thousand pounds have been liberally subscribed. At this moment no less than fourteen English and three Welsh cathedrals are intrusted to the care of one (our leviathan) member, Mr. Scott, in many of which important works are actually in progress, in others merely in contemplation, viz., Westminster and its Chapter-house, Salisbury, Gloucester, Chester, Exeter, Lichfield, Peterborough, Hereford, Ely, Oxford, Bath, Chichester, Ripon, and Worcester as regards its choir, St. David's, St. Asaph, and Bangor, in Wales. It would be marvellous, indeed, if with such a list of works requiring deep thought and study the world was unanimous in approval of *all* that had been done. There is possibly no race of living men (or women) so difficult to satisfy as ecclesiologists or archæologists, or whose views are less controlled by any fixed rules or data; but I beg to bear my testimony to the great care (I might almost say tender faithfulness) with which Mr. Scott has dealt with those restorations which it has been my good fortune to see, and I have heard those who are good judges of the peculiar characteristics of Welsh architecture, speak with great pleasure of the truthful care he has given to the three Welsh churches. I believe that the works at Chester, Bangor, and St. David's are of the most interesting and instructive kind, and that in each of them many features long lost to view have been discovered and laid bare.

These few works must evidently leave Mr. Scott with so much time on his hands, that the council can have little hesitation in expressing the hope that at no very distant date he may give us a description of some of these recent discoveries and peculiarities.

The work at Bristol Cathedral, under Mr. Street, promises to be as interesting as it is important. It is not an every-day task to build the nave of a cathedral, and we can only hope that in a city and county of such wealth there may be no lack of funds. Lincoln Cathedral has been entrusted to the care of Mr. Pearson, and, in whatever works may be undertaken there, I venture to believe that even archæologists will be unanimous in their approval.

If the public buildings are thus multiplying in number and improving in design, it cannot be said that the street and shop architecture of the metropolis is neglected. In the Belgravian district and in other parts private houses have lately risen with considerable architectural pretentions and adornment, and I think that the thanks of such a body as our Institute of Architects should be tendered to one who, like the the late Lord Westminster, determined to rebuild and beautify a large district of the metropolis at of the cost much income to himself.

This hurried list of works, either actually in progess or but recently finished, is, I think, full of interest for the architect, and of pride for the citizen of a country where such great efforts are attributable almost entirely to the individual zeal, energy, and wealth of its inhabitants. I could have extended it largely if time had permitted, and there are several other matters of deep interest for our profession which press on my mind, and which I would gladly have referred to, but in the incomplete condition of some of them, in the delicate nature of others, and in the fact that if health and life are spared me, it will be my duty, in the natural order of things here, to trespass on your patience again next year, it will be better that I bring this crude paper to a close.

It would ill become me, however, as the president of an English body of architects, to refrain from expressing, what I am sure all here and all in our ranks elsewhere must feel deeply, our sympathy and sorrow for the architects of those two great European countries now engaged in such a deadly war, but especially for those of France, trodden down and almost devastated as that country is by the presence of an enemy in her fair fields and in her cities and strongholds. We have no less than forty-four French and German architects members of our body, and three of these have received the honourable distinction of our Queen's Gold Medal. It is not for me, holding the quasi-official position I have the honour of doing, to attempt to apportion the blame of this bitter struggle (for blame undoubtedly there must be in these "*soi-disant*" days of civilisation and Christianity, when two of the foremost nations of Europe are seeking how most readily to destroy the other and undo all the labour of years in art and progress). Individually, I can have no doubt of the deep blame and responsibility. Unluckily, all that we can do is to hope for a speedy termination to such misery, and to be thankful that a similar visitation has not fallen on our own land,—a visitation from which France, with all her energy and talent and vitality, will not recover for many toilsome years.

And now a parting word. One of my predecessors in this chair has said:—"The architect is he who, with pencil and compass, with a mind full of deep things, under God's providence, and with his brave heart, creates all this, and toils on unheeded, often misunderstood, frequently blamed, and rarely encouraged, except by his own bright star of hope and faith. Let us work on then with the consciousness of something within us which may, sooner or later, before or when in the grave, be at length understood, admired, and honoured by our fellow men."

I quote these touching words from the address of one whom I am thankful to see still amongst us (a past president and our Honorary Secretary for Foreign Correspondence). I quote them as a true picture of the architect's position, which should appeal to all our feelings. I quote them specially as being descriptive of our friend's own position, for he is understood, admired, and honoured "before the grave" by all who know him best; and as being prophetic of the memory in which he will be held by his professional brethren when "in the grave." He will then be "understood" as an ardent untiring lover of his profession and its high calling; "admired" as a genuine warm-hearted friend and cultivated gentleman; and "honoured" for his unsullied unselfish life,—an example which we should *all* do well to follow.*

FIFTEENTH ANNUAL EXHIBITION OF THE PHOTOGRAPHIC SOCIETY.

The private view, on the 8th instant, of the Exhibition of the Photographic Society, at No. 9, Conduit-street, enables us to congratulate all those concerned on the high standard of excellence displayed. We do not limit our remarks to portraiture, or to any distinct branch of photographic art. There has been an advance along the whole line. In size, in clearness of definition, in rapidity of execution, in tint, in tone, and in permanent durability, we can cite distinct instances of success not previously reached. Nor can we omit to call attention to the fact that science, as well as art, has attained a new *organon* by the introduction of the actinic

* Professor Donaldson, Mr. F. Marrable, Mr. Godwin, and Mr. B. Ferrey commented briefly on portions of the address, and a warm vote of thanks to the president was carried by acclamation.

processes of delineation. Their value and ready applicability are as yet far from being fully appreciated. In the case of the office-work of the architect, the engineer, the surveyor, or the hydrographer, it very seldom occurs that a drawing is made of which it is not desirable to keep a copy. Two or three copies are, in very many instances, absolutely necessary, and would be always made, as a rule, if cost were no object. Each copy, if made with sufficient accuracy, and neither traced nor pricked through, involves an amount of labour nearly equal to that of the original. All this will be saved hereafter,—may be saved at this moment,—by photography. The heliotype process will produce, in little time, and at small cost, absolute *fac similes* in ink of any drawings of the kind. Not only the lines themselves, but written dimensions, notes, or signatures upon the drawings are at once reproducible; and the expense of triplicate copies will fall short of that of a single, and far less accurate, copying by hand. Should the golden time of Parliamentary deposits and parish plans ever return, the boon thus given to the hard-worked engineer will be found to be immense.

Among the most striking portraits on the walls, we call attention to those by Mr. Warwick Brookes, of Manchester, especially to 160, called "A Study,"—a veritable study for transparent depth of tone,—and 158, "A Portrait." Col. Stuart Wortley has sent a series of heads, about seven-eighths the size of life, produced with a vigour and a delicacy that seem to leave little to desire. Among these, "My Queen" (106), deserves the title,—an exquisite likeness of a very lovely face. "The Sibyl" and "Jealousy," close by, are valuable pathognomonic studies. Mrs. J. M. Cameron has sent a screenful of her well-known shadowy portraits taken slightly out of focus. Among these the first place must be awarded to "Beatrice Cenci," a magnificent adumbration of a beautiful and physiognomically noble face, in the pose and drapery of the well-known Italian sufferer,—one of the most favourite and often reproduced subjects in the whole range of portraiture. While we are far from saying that this sun-picture is free from fault, the light which bounds the left cheek, for instance, being far from happy (as it is not discernible whether it represents hair or drapery), yet the imaginative effect of the head and face, and the mode in which they seem to look out, as if by magic, not from a surface but from a transparent depth, are such as to show that we may yet obtain from the aid and service of the sun examples of a more subtle portraiture than can be limned by human fingers. We think that "My Queen" and "Mag" are the first photographic portraits that justify this opinion.

In admirable contrast, both as to size and sharpness of definition, to Mr. Cameron's charming gallery, are the "Instantaneous Photographs" of Mr. R. Faulkner. No. 87 gives us four-and-twenty children—the very counterfeit presentment of life. There is one little creature, to the left, laughing at the spectator, perhaps the most inimitable; but the excellence of all is of the first order. It is clear that the production of these lovely and life-like portraits there has demanded much more than the mere manipulation of the camera and the bath. Thoroughly sound artistic taste, and tact and knowledge of the disposition of children, must have been combined with perfect apparatus, pure and well-applied chemicals, and complete mastery of manipulation. We have never seen children (with rare exceptions), quite satisfactorily photographed before, and we shall be conferring a great benefit on all parents who seek to preserve, not only the features, but the fleeting graces, of the fairy tribes of the nursery, by sending them to see Mr. Faulkner's portraits. His "Studies" (88) are also admirable; but the children are unique.

Among landscapes the most important in size, and one of the most excellent in all respects, is (44) "The Lledr Valley Moel Seabod under a Mist," by F. C. Earl,—a veritable peep into Wales. Mr. Russel Manners Gordon gives specimens of six different processes, demanding the attentive comparative study of the artist. "On the Thames, Richmond," by the Taupenot process, is, perhaps, the best. Colonel Stuart Wortley contributes some of his powerful seaside pieces,—with the waves breaking into spray. Mr. Stephen Thompson's Venetian palaces, Mr. Vernon Heath's English forest scenery, Messrs. Robinson & Chevril's "Turn of the Tide" (66) and "First Hour of Night" (68), and some Indian architectural photographs, are among the most beautiful contents of this department of the Exhibition.

We should not omit the fine portraits by V. Blanchard, especially the "Studies" (23 and 24), or a portrait (18) by Robinson & Thompson. The series of photographs (299) illustrating the last performance of the passion play at Ober-Ammergau, by Captain Bedford Pim, R.N., is also extremely interesting.

In a very different walk of art the plain enamels, called photo-ceramic, of Mr. A. L. Henderson, are very fine. With them rank the enlarged portraits on opal, by Bullock, Brothers (205—207). The photo water-marks, by Woodbury's process, and the Woodbury-type transparencies, which, we are informed, are literally printed on glass, are all suggestive of appliances of photography as yet unattempted.

Very valuable for educational purposes, and even for higher physiological study, are the micro-photographs, illustrating entomological subjects, diatomaceæ, &c., by Messrs. Robinson and Thompson (370). They render microscopical information permanently accessible to every observer at a glance, and cannot fail to be appreciated by the physiologist. For illustrations of lectures and class teaching of natural history, they are invaluable. The *infusoria* are magnified to the extent of 800 diameters. The sting of the bee, the tongue of the cricket, the spider, the grass-fly, and other entomological dissections, show the infinitely delicate detail of the workmanship of the great Master Workman.

The Albert type, of which we have heard so much, is poorly represented by the "Pardabitz Hunt" (403). The Woodbury type is very admirably illustrated. See Nos. 414 to 420. The Heliotypes, printed in printer's ink in a printing-press, by Messrs. Edwards & Kidd, fill a dozen frames (397-399). Among these we notice four highly-imaginative landscapes by an artist who makes his appearance for the first time on these walls, and whose mode of treatment is admirably rendered by heliotypic printing. The album of *fac-simile* reproductions of Albert Dürer's and Van Leyden's works, printed in carbon by Edward's process, is a treasury of art which no student should be content until he has purchased. Mr. J. C. Belton's "Matt Paper Prints" from Titian's drawings (430-431) are simply magnificent. We confess that we have used language which may appear unbalanced or even exaggerated to those who have not studied the admirable works which we have selected as the best where almost all are good. But the verdict is that of impartial criticism; and we are not disposed to attenuate expressions of admiration which are fully merited by the objects described. After all, in most instances, it is to the grasping, by actinic chemistry, of the subtle graces of Nature herself, that these triumphs of the photographer owe their highest charms. The reproductions of artistic creations, excellent as they are, fall short of such forgeries upon nature as the "Beatrice Cenci."

THE ARCHITECTURAL ASSOCIATION.

On the 4th, the annual meeting of the Architectural Association was held in the House, in Conduit-street, when the president delivered an address, and the business of the session was commenced. The prizes offered last year have been thus awarded:—

Association prize of two guineas and a half to members, for the best essay on either of the following subjects: viz., 1. A monograph of the architect, Inigo Jones, and his works; 2. An essay on the causes that influenced the development of Mediæval architecture. Prize, Mr. John Slater.

Association prize of two guineas and a half to members of the Class of Design, for the best set of sketches; and a prize of one guinea and a half (also given by the Association) for the second-best series: first, to Mr. W. L. Spiers; second, to Mr. A. Webb; honourable mention, Mr. Clarke.

Mr. Jowers's prize for the best series of detail drawings submitted in the Class of Design, to Mr. W. L. Spiers; the extra prize to Mr. J. T. Newman.

Association prize of one guinea and a half to members of the Elementary Class of Design, for the best series of studies submitted during the session, Mr. J. A. Reeve; honourable mention, Mr. Yates.

Association prize of 2 guineas, to members of Class of Construction, for the best summary of subjects treated at the meetings of the class: Mr. J. Tulman, jun.

Sir William Tite's prize of 5 guineas, to members of the Association, for the best design for a middle-class school: Mr. E. Clarke. The design by Mr. J. Hinton Bryan was declared by the judges to be next in order of merit.

The Architectural Union Company's prize of 5*l.*, to members of the Association, for the best series of measured drawings from existing buildings in England, erected previously to the eighteenth century: Mr. Robert Pearsall. Second prize of 2*l.* 10*s.*, offered by the Association: Mr. Alexander H. Kersey. Honourable mention: Mr. J. A. Reeve.

On the 18th inst., Mr. Edmund Sharpe will lecture "On the Use of Colour in Diagrams illustrating the History of Architecture." Other arrangements include:—

December 2nd, Prize Essay. "On the Nineteenth Century," by Mr. J. W. Rhodes.

December 16th, "The Arrangement and Ventilation of Hospitals," by Mr. S. Salter.

December 30th, "Architectural Treatment of Rubbish," by Mr. G. R. Redgrave.

January 13th, 1871, "Colour Decoration," by Mr. J. D. Crace.

January 27th, "London as a Field of Study for an Architect," by Mr. T. R. Smith.

February 10th, Members' Soirée.

February 24th, "Notes on the Recent Works at All Hallows Church, Lombard-street, with Remarks on Sir Christopher Wren's Churches," by Mr. F. J. Francis.

March 10th, "Christian Symbolism," by Mr. G. H. Birch.

March 24th, "Ironwork of the Middle Ages," by Mr. C. Baily.

April 21st, "Treatment of Terra-cotta," by Mr. J. T. Perry.

May 5th, "Canterbury," by Mr. E. C. Lee.

May 19th, "Put Yourself in his Place," by Mr. E. J. Tarver.

June 2nd, "On the External Architectural Treatment of Portland Cement," by Mr. R. Plumbe.

June 16th, "Architectural Decoration," by Mr. C. Aldridge.

June 30th, "General Strength of Materials," by Mr. G. Aitchison.

The Report just now issued by the Association is a very interesting document, and shows how many facilities are at this time afforded to students who really desire to master their profession. We invite all the young men now in architects' offices to obtain and consider it. We would especially point to the Art Classes and the Class of Construction. The latter class was formed in order to assist the members in obtaining a knowledge of the practical part of their profession, by means of an organised system of mutual study. Attention is directed to subjects immediately connected with the practice of architecture, on which each member is expected to acquire information for himself, to be afterwards shared in common with his fellow students. Questions bearing upon the subject to be treated are issued with the Report, and a certain number are allotted to each evening on which the class meets, and the members are required to furnish replies in writing, systematically worked out, to as many as possible.

The questions are, for the most part, well set, although they exhibit a little slip or two. For example, when the student is asked under the heading, "Building Act," to "give drawing of chimney for furnaces 20-horse power in accordance with the Building Act," he is asked to do what cannot be done, the Building Act containing no instructions on the subject.

Students in the country, who cannot join the Association, would find the careful answering of these questions a most useful exercise.

The Association begins the new campaign with a good programme.

Explosion at the Westminster Palace Hotel.—While one of the waiters was in the act of lighting the gas in a sitting-room on the third floor, an explosion took place. He was thrown a distance of several feet, and was frightfully burnt about the hands, neck, and face. A chambermaid was thrown down, several of her ribs were fractured, and she was very much burnt about the body. Nearly every article of furniture in the room was broken, and the window and sashes were blown out into Victoria-street. While they were falling, part of the window-frame struck the head of a porter, who was delivering coals at the hotel. He was fearfully cut about the head.

MENDELSSOHN'S "MIDSUMMER NIGHT'S DREAM."

When we consider, if it be only for a moment, of the amount of labour and painstaking which have been expended in the endeavour to illustrate the life-doings of Shakspeare, we shall not, or ought not, to complain of the attempt, however small it may be, to complete, if possible, all the illustration it may be capable of. Even vague theory may be useful, for it may lead to truth, or point the way to it. In our former notes on the musical arrangements of our present gaffs,—the direct successors, as our theory is, of the theatre of Shakspeare,—it was affirmed that the mode of rendering music in them differed essentially from its practice in all other places of theatrical amusement; and that by the simple method of so *subordinating* the musical accompaniment to the uttered words as not in any way to interfere with their distinct hearing and understanding. If our readers have followed us so far, they are half-way on their journey from Covent Garden to the "Globe." Before we go further, there is one other thing to be noted which space forbade in our last, and it is a very singular and important one, indeed, quite unique, and out of the common theatrical or musical category of things. It is this, that in the resources of pure gaff music there is yet one thing more of, as we take it, very singular beauty,—viz, the announcement or foreboding of a coming stage event, even should such event be delayed to the next act, the curtain falling between the indication and the actual event,—by the playing at smaller or greater length some bars of music dramatically descriptive or indicative of such coming events, and as indicative of the character of the performer, and the part he is to act as the plot develops itself. It would be very difficult to devise anything more ingenious and subtle, or one better fitted to increase the interest of a well-told tale, if illustrated at all by a musical accompaniment. It is not a little singular that so beautiful a thought should have suggested itself, or found an abiding place in so humble a temple, and one may well wonder where it came from, and when first employed. It can hardly be thought that in the performances in the old Globe, any such work was possible, for the instruments would seem hardly to have admitted of it; neither could the music of the Globe have attained the necessary degree of refinement, for in all probability it never went much beyond the mere announcement of the coming on of a performer, and the adding to the noise and confusion of a stage battle. In opera, as we have endeavoured to show, the musical accompaniment is always so overpowering as almost always to drown the words, or, at all events, to make them of secondary importance; and the ear of the audience is taxed and even pained to find out what the play is about, and a book is in most cases necessary to enable the hearer to discover what the words are, and what the performer or singer is uttering. Indeed, the whole play or drama becomes a song, and the performer rises or falls, whichever it may be, from an actor to a singer. But in the gaff, as we have said, all this incovenience is obviated by the peculiar character and subdued nature of the musical accompaniment. It is too low to drown the words, and so really admits, which opera would not do, of a certain emphasis being given to a coming event by this preliminary strain of music indicative of its character and importance, and even foreshadowing, as it sometimes does, the master plot of the coming play. What would not such an idea become in the hands of a great master? We are led thus to enlarge a little on this interesting theme, on which certainly a book might be not a little usefully written, from the fact of Shakspeare and one of the greatest of musical composers having come together in a somewhat strange way. Shakspeare and Mendelssohn! Mendelssohn, as is so well known, set the "Midsummer Night's Dream" to music, and as it is now being performed in certainly a very appropriate place, the Queen's Theatre—Hullah's Music Hall that was of yore,—very many readers may have heard what he has done, and know well what it is like. Of course, it needs not be said what a very beautiful work it is, and how charmingly the great composer has caught the magic spirit of the Dream, and heightened and deepened its interest by the weird music he has wedded to it. Be it observed, in passing, that Mendelssohn never wrote an opera, symphonies, overtures, and oratorios alike, and, as it has been well said, claimed the exercise of his noble imagination and elegant fancy, of his pure taste and profound scholarship." In one style only his power was unproved, though not altogether untried. Mendelssohn never attempted opera, but, as it were, met it half-way in this very setting of the "Midsummer Night's Dream,"—nay, we should almost have imagined that he had indeed, and in veritable fact, gone into and borrowed some passing strains from a penny gaff, but from the fact—the unfortunate fact—that he has utterly missed the idea, and as utterly failed to invent anything better, or as well and good. Let us be understood: it is worth a few lines of even indifferent talk. Shakspeare and Mendelssohn, opera and gaff. Mendelssohn has not attempted to perform the feat of converting the weird "Dream" into an opera, as "Faust" has been exalted or debased into one; his evident intention was to help the idea of the great poet by adding the charm and mystery of music to his words. But *how* has he performed the magic feat? Not, as we have said, by operatic means, elaborate and word-crushing as that is, though so captivating,—not certainly through the simple gaff mode of creating an atmosphere of sound through which the words are distinctly heard and "visible;" but in the most awkward and even stupid way which it is well possible to imagine. We say nothing of the wonderfully beautiful "overture," whose only fault is its shortness; for nothing more expressive of the dream or "idle fancy" of the immortal poet could be conceived; and it shows how thoroughly well Mendelssohn could have accomplished his work, could he but have hit on the right way to do it. He had all the "notes" and the right key, and the words were there for him to do what he liked with them; but he knew nothing of what to do with his magic wand, or how or when to wield it. Oh, that he had condescended to drop into a penny house to get an idea and the cue. But *how* has Mendelssohn accomplished the task he had before him? Why, shortly thus: *after*,—we repeat the word *after*,—each little sentence of dialogue or otherwise, more or less explanatory and descriptive of the story of the "Dream," Mendelssohn has written a few bars of delightful music, with the idea, apparently, of emphasising such words; so that large portions of the play are cut up into little bits, with long full stops between them; thus almost totally to destroy the connexion and sequence of them; and he has done this without the advantage which the gaff system of doing things has of *indicating beforehand* what is to come, or of *adding* to the strength of it while it is being uttered. It would be difficult to hit on a mode of enlisting music into the service of verse more awkward or more wasteful of musical power. But more than this, so totally does Mendelssohn seem to have been at a loss what to do,—and we may suppose, too, in the endeavour to avoid actually sliding into *opera*,—that he has written long and solemn passages to fill up time during the mere shifting of scenes; or, in other words, not having the idea as in opera to *accompany* the words, and go along with the words and action of the play Dream, he has simply and shortly put all his fine music where the full stops are, and where the necessary mechanical changes and consequent pauses interrupt the continuous action of the beautiful and idle fancy. Contrast this with pure opera, where the music accompanies and goes along with the words, and so often, unfortunately, smothers them; or with the "gaff" idea, wherein the music, as in pure opera, goes along with the words and intensifies them, but, unlike opera, does not smother them or prevent their being heard. What a lesson is here, from the very highest to the very lowest of human and artistic things,—from Belgravia and its "sustained splendours" to the gutters. Mendelssohn met them both half-way. It has been said that he could not, even had he wished, have written an opera: he certainly would not, had he been asked, have written music for the "Demon Barron," or the "Slave Ship;" but he tried to write music for Shakspeare's "Dream." Would that he had done so; but, instead of it, he has done but little else than fill in the full stops and time of scene-shifting in it with musical notes. Never was there such a chance before and power of accomplishing a triumphant musical feat; for it is only just possible to imagine what Mendelssohn's "Dream" might have been had he but bethought himself of the beautiful idea of going along and keeping pace with the story of the "Dream" with a continuous strain of his lovely and weird music, ever flowing with it, not hiding or interrupting it; and thus to share with the great poet himself the supreme glory of bewitching the world's ear! But this artistic feat was to be accomplished in one of two ways,—he must have *invented* the way of work himself, or he must have condescended to the low things of this human life, and in the obscure corners of a gaff, and among its rough and ragged audience, even in this little island, so full of wealth for the foreign artist, he might have found the way to a throne by the side of the author of "the Dream"—but that way only in a gaff!

MEMORIAL WINDOWS IN THE CITY.

Guildhall.—The Court of Common Council on the 29th of April, 1869, ordered that the west window of the Guildhall should be filled with stained glass in the highest style of art, in memory of the many virtues and the high and spotless character of the late Prince Consort. It was thought right that both foreign and British artists should have opportunities of competing for the work, and advertisements were inserted inviting designs and estimates. Twenty designs were received by the committee, who, after a very careful consideration, selected six, which were submitted to Her Majesty for selection through Sir Thomas Biddulph. These were soon afterwards returned, the Queen intimating her approval of two of them more particularly. One of these—that sent in by Messrs. Ward & Hughes—was unanimously accepted by the Committee, they considering that the most effective window would be produced from that design. In that choice they afterwards received an expression of Her Majesty's entire concurrence. They consequently made the necessary arrangements for its production, at an expense of 1,000*l*. The glass, as most persons have heard, is now set up in its place. The window is one of five lights, with a transom, the lower tier double-panelled, so that the number of divisions is fifteen; there are also two side wings, occupied by four figures representing Wisdom, Prudence, Justice, and Fortitude.

The design, though of the nineteenth century, is intended to harmonise with the architecture of the hall, and is in accordance with the principle of treatment observed in the best examples of the fifteenth and sixteenth centuries. The lower tier is occupied by five subjects, the representation of each filling two panels, thus:—

1. Agriculture. (1) The shepherd tending his flock, and the ploughman his plough; and (2) a harvest scene.
2. Industry. (1) Women spinning, &c.; and (2) Bleaching cloth.
3. Trades. (1) A blacksmith and a goldsmith at work; (2) A mason, a builder, and an architect.
4. The Institutions in which His Royal Highness took so great an interest. (1) Education; (2) Orphanage.
5. Commerce. (1) Ships loading and unloading; (2) Merchants on 'change.

The upper row contains representations of (1) Music, poetry, and history; (2) Peace, purity, religion, and home prosperity; (3) Architecture, painting, and sculpture; (4) Science and the learned bodies. In the centre of these is a figure of the Prince, seated in an attitude of meditation, book in hand. In the background are two figures unveiling the first Crystal Palace, or Exhibition of 1851.

The work is described as a mosaic in the strictest sense, and "there are as many as 580 pieces of glass in one square of 30 superficial feet. The leads forming the outline are not observable, the affectation of broken leading being studiously avoided." The entire design, together with the execution, is that of Mr. Hughes. The window, we are inclined to think, has not yet been seen properly, in its position, by any one. We have visited the Guildhall twice purposely, but it was shrouded in gloom on both occasions, so that we could form no opinion upon it whatever. We shall catch a gleam of sunshine upon it one day.

St. Paul's Cathedral.—The Cotton Memorial window has been set up at the east end of the south chancel aisle. Like others recently erected in the cathedral, it was executed by Munich glass-painters, and is a picture-window. It occupies about two-thirds of the opening in height, and has frame-work around it, which includes at the bottom the arms of the see of London on one side, and those of the person memorialised on the other. The subject chosen is the Stoning of Stephen, with the adjuration "Jesus, receive my soul" above, and a Latin inscription below, in memory of Mr. William Cotton. It appears to be set up within an existing window, with its bars, and has besides a wire-guard, which, altogether,—the colour of the window being, for the most part, thin,—has a somewhat confusing effect. Looked at from its own point of view, and not now reopening the question as to the best mode of decorating glass, the painting is a successful work, and is certainly more agreeable to look at, and more satisfying to

the mind, than some of the sprawling and expressionless saints put up under cover of the better system. The head of the martyr is finely expressive of piety and resignation.

THE CORPORATION SLAUGHTER-HOUSES, SALFORD.

The site of the new slaughter-houses, which are six in number, is at the north-west corner of the plot of land recently acquired for the extension of the cattle-market in Cross-lane. Mr. J. Bowden, the surveyor to the corporation is the architect. Each building contains a slaughter-house proper and a carcass-room, the one being 21 ft. long by 18 ft. 6 in. broad, and the other 36 ft. long by 9 ft. 6 in. broad. The slaughter-house is provided with the usual apparatus for raising the animal after it is killed, and by an ingenious application of pulleys, and the hanging rails, the carcass, after it is dressed, can be cut in two, and deposited in the carcass-room, without being taken off the hooks. By this arrangement the slaughter-house can be quickly cleared for the reception of other animals. The carcass-rooms are a new feature in the construction of slaughter-houses. Neither in Edinburgh nor Glasgow have they been adopted.

The walls of three of the buildings are lined to the height of about 5 ft. with enamelled brick, and those of the remaining three with enamelled slate. The object of the variety in the lining is to test the durability of the two kinds of material. The floors are laid with cement flagging, to prevent the absorption of blood or other refuse likely to decay or become offensive. In each of the slaughter-houses the sewers are fitted with one of Newton's patent gulleys or traps, which can be emptied at pleasure of the sediment and objectionable matter which they intercept. Each room is provided with one of Kennedy's self-acting taps, to prevent the waste of water. A range of louvre ventilators runs along the top of the entire buildings, while in the slaughter-houses there are windows, one on each side, of similar construction, about 10 ft. from the ground. These are in addition to the ordinary windows, which are not placed so high. There is also accommodation provided for cattle or sheep about to be slaughtered. In the rear, and adjoining each slaughter-house, there is a roofed pen, 19 ft. by 14 ft., devoted to that purpose. This is exclusive of a building, 150 ft. long by 25 ft. broad, which has been erected for the accommodation of cattle coming to the market from a distance and arriving the night before. It is fitted with Musgrave's patent iron stalls, and will hold about 100 head. The builders were Messrs. Warburton, Brothers, of Salford. The cost was about 2,800*l*.

THE LEICESTERSHIRE GRANITES.

The attention of the public has of late been directed to the question of the best materials for paving streets and roads, and many interesting experiments have been tried with a variety of articles; but, up to the present time, it may be doubted whether anything has been discovered that is likely to supersede the old-fashioned granite setts.

In this article a brief account is given of one of the largest sources from which these granite setts and other road materials are obtained, viz., the quarries scattered over the granitic and syenitic formations of Leicestershire; and among these igneous rocks of interest to the architect, engineer, and surveyor may be mentioned those obtained from the quarries of Mount Sorrel, Markfield, Bardon Hill, Groby, and Sheepshed, or Charnwood, as being the principal works in this county, and all of which are within a radius of twelve miles from the flourishing town of Leicester.

The first of these, "The Mount Sorrel," is by far the largest granite quarry in the United Kingdom. It is situated upon the Loughborough and Leicester road, and distant some seven miles or so from the latter town, and is worked by a private firm of very old standing under the style of "The Mount Sorrel Granite Company." The works have their own line of railway, which joins the Midland between Barrow-on-Soar and Sileby, and they have also a wharf on the Leicester and Loughborough Canal.

As some indication of the extent of these works, and the business transacted, it may be stated that constant employment is given to from 500 to 600 men and lads, under the able management of Mr. C. H. B. Hambly. This granite is found varying in colour from a rich grey to a dark red, and when polished has a fine appearance. It is a substantial and durable stone, and is employed in mostly all the purposes for which granites are suitable. It is, however, chiefly manufactured into kerb, setts, and macadam, for which purposes its toughness and enduring qualities render it valuable.

The working of the several Leicestershire quarries being very similar, a short account of the methods employed at Mount Sorrel will be sufficient for all. The "getting," as it is termed by the workmen,—that is, bringing down the rock from its 100 ft. face to the floor of the quarry,—is accomplished solely by blasting.

Holes are drilled into the solid rock, varying in diameter from 1 in. to 3 in., and in depth from 2 ft. to 30 ft.

The drillers work in gangs of three. One man turns the drill, and the others strike. The quantity of powder used in these blasting operations varies with the magnitude of the holes and the amount of rock intended to be detached. The masses of rock, after being thrown down are further blasted into smaller lumps, and these again are "blocked" into the required sizes by heavy (28 lb.) hammers.

The hewn rough blocks thus obtained are next split into "setts" or other articles by blunt chisel-faced hammers. Those irregularly-shaped pieces of rock, unsuitable for conversion into the more valued "setts," &c., are broken up by hand for "macadam," or are passed through the "mill," where, by machinery, a like result is attained.

The "mill" is fitted up with two of Blake's patent breakers, in which the stone is crushed in passing through, and then sifted, by revolving screens, into macadam, chippings, and gravel, the two latter being largely used on carriage-drives, garden-walks, and footpaths; their dark red colour, due to ferric oxide, rendering them pleasing to the eye, and the sharp, angular edges of each piece allowing the whole to bind firmly together, forming a capital walk.

Also considerable quantities of kerbs, mill-stones, and other articles of masonry are prepared upon these works.

The Markfield and Bardon Hill Quarries are situated upon the Leicester and Ashby-de-la-Zouch road, and are distant, respectively, seven and ten miles from Leicester.

The Markfield stone is a fine dark green syenite, with a good cleavage, and cuts readily. It has a somewhat higher specific weight than the Mount Sorrel granite, and a large percentage of hornblende renders it more slippery in paved works after the first roughness has worn off.

This stone is cut up into paving setts and kerbs, and broken into macadam for roads, for which latter purpose its toughness and high resistance to crushing weights make it a very proper material. These quarries are worked by the Messrs. Ellis & Everard, who also own those at Bardon Hill.

The Bardon Hill rock is a trap or greenstone, and having no cubical cleavage it cannot be readily cut into setts, kerbs, or similar articles, as in the other quarries: it is therefore entirely employed in macadamising, and the Messrs. Ellis & Everard have erected powerful machinery, consisting of toothed rollers and suitable riddles, for preparing this material.

The specific weight of this rock is about the same as Markfield; but it is not perhaps always considered quite so good a material as that syenite for roads. There is no doubt that this Bardon stone would prove a very valuable article for paving, and wear well and not slippery; but its splintery and non-cubical cleavage appears thus far to preclude its adoption.

The quarries of Groby are also situated upon the Ashby road, and distant some five miles from Leicester. They are now being worked by a newly-formed company, styled the "Groby Granite Company, Limited." This stone, like the Markfield, is a dark green syenite, which it much resembles, and has likewise a ready cleavage.

The beautiful deep green tint of these rocks, frequently mingled with crystals of pink felspar, ought to ensure their demand for polished work in architectural and monumental designs, if they could be obtained in large blocks. But from some cause they do not appear at present to have been called into requisition with this object; probably they are expensive to work, from hardness; and owing to the presence of small particles of a soft material—perhaps decomposed hornblende—the polished work will have a pitted appearance.

There are yet, however, many positions in which these syenites would form a pleasing contrast with the commoner and more sober shades of the red and grey granites.

The Groby Company have one of Blake's machines for breaking macadam, and further prepare paving setts and kerbs.

A very dense syenitic greenstone is quarried by Mr. Lowe, near Sheepshed, about four miles from Loughborough. It is cut into setts in the usual manner, and broken by hand into macadam. Its much higher specific weight is a disadvantage in competing with the other rocks before mentioned.

The granites that are described in this article being in very extensive and increasing demand for public works, a series of experiments have been made upon a sufficient number of samples to determine the specific weight of each.

The results are annexed in a tabulated form, and will probably be found useful to members of the professions, and also to contractors, builders, and paviors.

It only remains to add that the stones employed in these trials were very carefully selected from the quarries as being fair and average specimens of their respective kinds.

Results of Experiments.

Table I. shows the actual specific gravity of each sample, and mean specific gravity of all the samples of each quarry. This will be found convenient for general purposes, and from it are deduced the remaining tables:—

	No. 1. Mount Sorrel Granite.	No. 2. Groby Syenite.	No. 3. Bardon Hill Greenstone.	No. 4. Markfield Syenite.	No. 5. Charnwood or Sheepshed Syenitic Greenstone.
	2·643	2·764	2·889	2·839	2·945
	2·663	2·800	2·815	2·835	2·947
	2·670	2·774	2·814	2·834	2·945
	2·659	2·770	2·841	2·825	2·919
		2·787	2·800	2·829	2·909
		2·753	2·801	2·823	2·946
Average...	2·659	2·775	2·827	2·831	2·935

Table II. shows the weight per cubic foot of each kind of stone, and will be handy in calculating the weight of masses of material, as in columns, piers, and other solid structures:—

No. 1. Mount Sorrel Granite.	No. 2. Groby Syenite.	No. 3. Bardon Hill Greenstone.	No. 4. Markfield Syenite.	No. 5. Charnwood or Sheepshed Syenitic Greenstone.
166·19	173·44	176·69	176·94	183·44

Table III. shows in cubic feet the bulk of each class of rock that is necessary for the weight of one ton:—

No. 1. Mount Sorrel Granite.	No. 2. Groby Syenite.	No. 3. Bardon Hill Greenstone.	No. 4. Markfield Syenite.	No. 5. Charnwood or Sheepshed Syenitic Greenstone.
13.48	12·91	12·67	12·65	12·21

Table IV. shows a comparative statement of the quantities of each description of stone required to pave with setts or coat with macadam an equal area. Thus, assuming that setts 3 in. wide and 4 in. deep will cover 500 square yards of roadway, then the undermentioned quantities of the products of each quarry will be necessary.

	Tons.	cwt.	qrs.
No. 1. Mount Sorrel	100	0	0
No. 2. Groby Syenite	104	7	1
No. 3. Bardon Hill Greenstone	106	6	1
No. 4. Markfield Syenite	106	9	2
No. 5. Charnwood or Sheepshed Syenitic Greenstone	110	7	2

The Diamonds of South Africa.—We are told that Mr. Streeter, the jeweller, in conjunction with one or two other gentlemen, has organised an expedition to the South African diamond-fields; and they will take with them Mr. T. W. Tobin, secretary of the Polytechnic Institution. On Mr. Tobin's return, the public will, of course, have a full and particular account of the locality and its products, in the shape of an illustrated lecture at the Polytechnic.

ARCHITECTS UNDER THE OFFICE OF WORKS.

THE following is a copy of the "Memorandum of the Terms of Appointment of Architects for Public Buildings," which has been issued by the Office of Works. Mr. Street and Mr. Waterhouse are understood to have signed it; Professor Scott and Mr. E. M. Barry, we are told, still hesitate:—

1. The architect will by a given time prepare and deliver to the commissioners at their office sketch plans, elevations, and sections of the intended building, having a strict regard to the proposed cost, so that in the event of the approval of the design a contract might be made with a responsible builder to execute the building, including fixtures and fittings, warming, ventilating, lighting, boundary fences, lodges, and every other work necessary to render the building fit for occupation for the intended purpose, excepting only furniture, for a sum not exceeding the amount of the proposed maximum expenditure.

2. If the commissioners or Government should abandon the intention of erecting the proposed building, the architect shall be entitled to a sum to be fixed beforehand, and to the return of his sketches.

3. If and when the sketches shall be approved by the commissioners, with or without modifications, and the commissioners shall desire to proceed with the building, the architect shall, on or before a day to be named, prepare and deliver to the commissioners at their office working drawings and specifications of the works, in accordance with the approved sketches, for the purpose of being submitted to the builders for tender, either by limited or open competition

4. The drawings and specification to be so submitted are to be full and complete in every respect, so as to enable the commissioners to enter into a contract thereupon with a reponsible builder for the erection and completion of the entire building.

5. If the amount of the most approved tender shall exceed the maximum amount of the proposed expenditure, the architect shall, as required by the commissioners, revise his plans and drawings so as to bring the expenditure on the buildings within the prescribed limit.

6. The plans, drawings, specifications, and other documents relating to the works, whether actually referred to in the contract or not, shall be the property of the commissioners, and shall be deposited in the Office of Works; and the architect shall, at his own expense, make all tracings and copies of plans, drawings, and other documents which may be necessary for the conduct of the works.

7. The architect shall convey the instructions of the commissioners to the builder; he shall superintend the works, and from time to time certify the amounts due to the builder under the contract.

8. The architect shall also perform, or cause to be performed, all other services necessarily or ordinarily rendered by an architect or his assistants, with reference to the works, to their final completion, but he will have the assistance of a clerk of the works, whose salary shall be paid by the commissioners.

9. The architect shall be at liberty to vary architectural details, provided such variations do not involve extra cost, but he shall not otherwise give any instructions to the builder at variance with the contract, and shall on no account incur any increased expenditure, without the sanction, in writing, of the commissioners.

10. In case any additional or substituted works shall become necessary, during the execution of the contract works, the architect shall furnish the additional plans, drawings, and specifications at the earliest possible time after the necessity has first arisen, so as to afford sufficient time for obtaining tenders and contracts for the execution of such additional or substituted works, without incurring delay in the execution of the contract works.

11. The remuneration of the architect shall be a fixed sum, to be agreed on beforehand.

One-third part of the said sum shall be paid to the architect immediately after the execution of the contract.

One other third part of the same sum shall be paid to the architect as soon as one-half of the contract sum has been paid to the builder.

And the remaining one-third part of the said sum shall be paid to the architect after the final payment to the builder.

12. If, after the working drawings complete for the execution of the entire work have been made, the Commissioners should fail to invite tenders or make a contract, and proceed with the works, the architect shall be entitled to be paid a certain fixed sum, to be agreed on beforehand, and the plans, drawings, and specifications shall belong to the commissioners; or, if the commissioners shall desire to proceed with a part only of the works, the architect shall be entitled to a proportionate part of the remuneration mentioned in article 11, for the works to be executed, in addition to a proportionate part of the sum mentioned in this article in respect of the works intended to be abandoned.

13. Except in the case of alterations or additions, made with the written authority of the commissioners, the architect shall not be entitled to any remuneration for his services beyond the sums hereinbefore stated.

14. In case of any additions or alterations to the original design, made by the direction or with the sanction of the commissioners, the architect shall be entitled to such increased remuneration as may be agreed on, or, in the absence of agreement, shall be determined by arbitration in manner hereinafter provided.

15. In case of the architect becoming incapacitated or dying, he or his representatives shall hand over to the commissioners, or whomsoever they may direct, all plans, drawings, and papers relating to the works which may have been in his possession at the time of his incapacity or decease, and he or his representatives shall only be entitled to such equitable proportion of the unpaid part of the said remuneration as may be agreed upon.

16. Any dispute or question between the architect and the commissioners shall be referred to an arbitrator appointed by the Treasury, who shall have such powers and authority as the Treasury shall think fit to give him, in addition to the ordinary powers of an arbitrator.

17. No rules of the Royal Institute of British Architects or any other society shall be held binding upon the commissioners in reference to the works or matters herein referred to.

I, the undersigned of , hereby accept the appointment of architect to the proposed building of , at , subject to the terms of the annexed memorandum, with the following special provisions; that is to say,—

a. The maximum amount proposed to be expended referred to in Article 1 is the sum of £

b. The time for delivery of sketch-plans, &c., as mentioned in Article 1, shall be

c. The remuneration referred to in Article 2 for the event therein stated shall be the sum of £

d. The day for the delivery of the working drawings, and specifications, as mentioned in Article 3, shall be or within of the notification by the Commissioners of their approval of the sketches and intention to proceed with the building.

e. The architect's remuneration referred to in Article 11 shall be the sum of £

f. The architect's remuneration referred to in Article 12, in the event of the works not being proceeded with, shall be the sum of £

ARCHITECTS, SURVEYORS, AND THE OFFICE OF WORKS.

SIR,—At a time when Mr. Ayrton seems disposed to make the position of Government architects as unpleasant as possible, and to offer a public affront to the Institute, may I ask if it is true that, when tenders were delivered the other day for the new Home and Colonial Offices, all the builders tendering rejected as unfair the conditions sought to be imposed upon them by the Office of Works, and substituted an offer to undertake the work on the conditions of contract lately put forth as model conditions by the same much-abused "Royal Institute of British Architects?"

It would be interesting to know if the rejected conditions were drawn up by the same hand as the terms now to be imposed on architects, who, it may be found, have already proved to be more easy to conquer in detail than the builders.

I do not suppose, in these days of beating down professional charges, that it can really be true that the wary surveyor to the Board has allowed such a payment of 6,000*l*., as was named, to be paid for quantities to the surveyors, though one of them is his own son. It is, however, remarkable that no denial of this statement has (as far as I know) yet appeared. Certainly, if such fees can be so earned, it is better to be a surveyor than an architect. CUSTOS.

THE MARGATE JETTY COMPETITION.

WE have received two other letters precisely similar in effect to the one we printed last week. No advantage could be expected from printing them. *Keble's Gazette* gives some particulars of the designs:—

The first premiated design, that of Mr. G. G. Page, shows an extension of the present jetty head northwards in the form of a regular octagon, each side of which will be 120 ft. long, and seven sides of which will be available for the landing and embarkation of passengers. The designer proposes a central building, or tower, in the Alhambra style, with restaurant below, above which it is proposed to form a stand for the promenade band, covered with a wrought-iron sounding-tower, and a look-out house on the top. His scheme may be described as a concentric hexagonal, the promenade to intersect at the centre by four radial arms, or, as they are termed upon the plan, bridges, the angle-posts being open to the sea, and not covered with the deck, as shown in the other plans. This promenade will be 25 ft. wide and one-sixth of a mile in circumference. It is proposed that there shall be three landing-stages below, of 12 ft. wide, and eight kiosks at the angles, which will be occupied as shops for the sale of fancy goods of different kinds. Screens of plate glass and seats are proposed to be erected, somewhat after the style of the pier at Brighton; and it is proposed to carry up a tower at each corner of the present Jetty-head, and make a floor above the same, to be used as a smoking-lounge, in case of need, and thus to create a large sheltered place for the use of visitors in case of sudden showers. Altogether the design has about it a considerable amount of originality of style: the drawings by which it is illustrated are executed in a masterly manner. The second premiated design, that of Mr. MacNab Soul, clerk to the Pier Company, is of the same form as that of Mr. Page, but considerably smaller, showing but a comparatively limited area of landing-stages. He also proposes an octagonal building in the centre, with raised band stand, and a verandah running round; but otherwise his drawings do not enter into any details.

The third premiated design, by Mr. W. Lane Scar, is illustrated by seven drawings, worked out in very careful detail, showing every pier, pile, and brace in its construction. It is also of an octagonal shape, and provides refreshment and reading rooms, seats for 800 people, and a promenade that would accommodate 3,500 persons at one time. He proposes to remove entirely the present timber head, and to bridge the space occupied thereby with an extension of the present iron structure. His drawings show three landing-stages very similar in construction to those suggested by Mr. Page, but his design is not on so ambitious a scale, although in it there is evidence of a large amount of painstaking; and the report by which it is accompanied has been considered to be the best of any of those sent in. The design marked "Experience" (Mr. Cubitt, of Westminster), has deservedly attracted notice. He proposes to throw out a projection on either side of the present Jetty-head, and his design has thus somewhat the appearance of a butterfly, the feet being the present Jetty-head, and the wings the proposed extension thereof. His plan presents a landing-place, 370 ft. long on the sea side, while upon the south side two floating stages or large pontoons would rise and fall with the tide, and thus accommodate themselves to every requirement. All the premiated plans are based upon the octagon. All of them are to be carried on iron piles sunk deep into the solid chalk, and there is no doubt that any one of them would be a great improvement indeed on the present bald and insufficient accommodation which the Jetty now affords. The estimates are in all cases somewhat below the sum limited by the directors (11,000*l*.), with the exception of that signed "Experience," which the author states would cost about 13,000*l*.

PRUSSIAN ARMY SANITARY DEFECTS AT THE SEAT OF WAR.

THE warnings and advice of the *Builder*, given on the declaration of war, as to the need there would be for special care of sick and wounded, and as to modes by which such care might best be administered, do not seem to have been of much avail. The present condition of the Prussian armies in France is said, by some of the war correspondents, to be as bad as the worst state of the British army in the Crimea, 1854-55. Hunger-Typhus is named as prevailing at Metz; 20 per cent. of the men in the field are said to be sick. It is reported that there have been for some time in the Prussian armies not fewer than 2,000 burials per day. We are told that amputated men are sent away without necessary clothing, that sick are crowded for days on damp straw in fœtid atmospheres, and that amputated patients lie on the floors amidst blood and impurities sufficient to destroy all chances of recovery.

Scorbutus, dysentery, and fever rage so that for Prussia the sword of disease is the most deadly danger to her armies. Count Bismark declines, or makes impossible, an armistice, and well he may, as at the present rate of loss the Prussian soldiers are so fast perishing of disease, that the twenty-five days' delay proposed would mean, unless we are gravely misinformed, a loss of 50,000 soldiers. When will statesmen learn and practise the lessons sanitary science teaches?

LIVERPOOL MASTER BUILDERS' ASSOCIATION.

THE annual dinner of this Association has been held at the Adelphi Hotel. It was attended by about eighty members and several invited guests. Mr. E. Hughes, president of the Association, occupied the chair. After the loyal and patriotic toasts, the chairman proposed "The Liverpool Master Builders' Association."

Mr. S. W. Holme, in responding, said that during the short career of the Association it had always been their happiness to point, on these annual occasions of festivity, to good work that had been done during the past year. The year 1870 had not been an exception to this. A settlement had been made with regard to the carpenters' and joiners' trade rules. The carpenters and joiners were by far the largest body of operatives in Liverpool, and the Association was to be congratulated that, after much consideration, it had introduced a code of rules which had proved satisfactory alike to the employers and the operatives. The year had also

witnessed the introduction of the hour system into a portion of the building trade in Liverpool. The slaters and plasterers had still to incorporate this system in their code of rules. The question of arbitration had been before the public within the last few weeks. Arbitration had been introduced into all their trade rules, and it would be adopted whenever occasion required; but a scheme was brought forward by the operatives in a novel and complicated manner, and, although the committee had given it careful consideration, they had not yet seen their way to co-operate in it.

In proposing "The General Builders' Association," the chairman stated that it had emancipated the trade from many abuses. He associated the toast with the name of Mr. Johnson, of Manchester, who had his life threatened, his premises burnt down, and his property destroyed by trade unionists. Mr. Johnson compared the position of the trade now with that of two years ago, to show what the General Builders' Association had done. Bad as Liverpool was two years since, Manchester was worse, in regard to the tyranny of the trade societies. In Manchester they were not allowed to make bricks by machinery, and if they were made nobody would set them. He employed 120 bricklayers four years, and was allowed one apprentice. Although he had had his life threatened, and his property destroyed, even if he were single-handed he would put down the Brickmakers' Union, and make a million of bricks a week until the Union came to terms. His house was still guarded by a policeman every night, and that was how he lived, in a state of siege. In conclusion, he advocated an equalisation of the summer and winter wages. Several other toasts of a complimentary nature were heartily responded to.

KENSINGTON IMPROVEMENTS.

Great changes have been made in Kensington in the neighbourhood of the parish church. It seems to us, however, regrettable that the main road was not made wider while the authorities were about it. Opposite the vestry-hall it is certainly too narrow. It suggests the old complaint of spoiling the ship for a ha'porth of tar. Some good houses have been erected on the new line of road, and our remark, we fear, can have no practical effect in this immediate case. Still, it may lead to consideration in others, and so not be without value. All the new thoroughfares in the metropolis and its neighbourhood should be kept as wide as possible, within the limit of say 100 ft.

SCHOOLS OF ART AND OF SCIENCE.

The Reading School of Art.—The annual distribution of prizes to the successful pupils of this school took place in the town-hall. The chair was occupied by the president, Mr. Higford Burr, of Aldermaston Court. A large audience assembled, and the pupils of the school occupied the front seats. Some of the drawings of the pupils, and of the master (Mr. Havell), were exhibited in the council-chamber. The prizes awarded in the evening were also exhibited. The chairman was supported by Mr. H. Cole, C.B., who distributed the prizes and addressed the meeting.

The report of the committee expressed pleasure in recording that the various classes have been maintained in their usual efficiency. The number of pupils attending the art school has been eighty-seven. Of these seventy-five presented themselves for examination in March last, in the second grade. Forty-three were successful, and received certificates of merit. Thirteen were awarded prizes by the Department. Works for the third grade were sent to South Kensington by thirty-eight students. Thirty-seven were accepted, as showing the pupils had been satisfactorily taught. Five received prizes. The committee have formed science classes in geometry, machine construction and drawing, and building construction. In the first of these, three were examined, but did not pass; in the second, four were examined and two passed; in the third, four were examined, two passed, and one gained a prize. With a view to the further development of the science classes, the committee have determined to increase the number of members, and at a meeting held on the 20th inst. it was resolved that to the subjects previously taught, inorganic chemistry, animal physiology and botany, and theoretical and applied mechanics should be added."

The Chairman said that he should have taken the chair with the greater satisfaction that evening if the report had led them to believe that the number of pupils attending the school of art had increased. He was sorry there had been a falling off in the numbers, and he hoped that the loss would be made up during the ensuing year. In introducing Mr. Cole, the chairman said this gentleman had been endeavouring to revive the art of building in terra-cotta. In some parts of England there were erected beautiful houses of terra-cotta, and there was one at Sutton-place, Guildford. There were no stones in these buildings; they were composed of baked earth, the Italian words terra-cotta simply meaning baked earth. These houses were built in 1521, and yet the ornamentation was as sharp and perfect now as on the day when they were built. This was a subject of considerable importance, because in some counties stone was scarce. There was no building stone to be had in Berkshire, and if they possessed the art of building in terra-cotta, beautiful houses might be erected. He was only sorry that his own residence at Aldermaston had not been built in terra-cotta.

The Oxford School of Science and Art.—A crowded public meeting has been held in the townhall, for the purpose of witnessing the distribution of prizes to the successful students in this school. A collection of the drawings and paintings of the students and others had been on view in the hall. The visitors were numerous on each day. The public distribution of prizes was announced for eight o'clock, when the hall was filled, and many were unable to gain admission. Mr. W. Vernon Harcourt, M.P., occupied the chair, and distributed the prizes, and the hon. gentleman was accompanied on the platform by the Very Rev. the Vice-Chancellor, the Mayor of Oxford, and other gentlemen. In alluding to the progress of the school, the chairman explained that the nation gave a certain number of prizes to be competed for by the whole of England, and the results of that competition were the drawings which now for the first time were exhibited in the townhall. Among those prizes there were eight gold and twenty-two silver medals, and of the latter Oxford had gained one. There were fifty-seven bronze medals, and one had come to Oxford; there were eighty-seven book prizes, of which this city had secured two. Altogether there were 104 of these schools in the country, out of which only thirty-nine obtained the 10*l.* prizes, and of these Oxford was one. The Government grant was gradually increasing; the number of students here was 192, and there were only seven schools in England that had a greater number. The total number of students in the day schools was 301, and there were only fourteen schools in England that had more. They would therefore think that, considering its population, and the conditions, Oxford might feel proud of its position, and hope that it would improve in the future. Professor Smith spoke of the success of the science side of the school. The number of pupils, he said, was seventy-six, and the prizes gained by them had been most satisfactory. That argued well for the pains which the pupils had taken, as well as for the skill of the several teachers.

The Belfast School of Art.—This school, which has recently been established, has just commenced the business of the first session, under circumstances which augur well for its future success. The school is situated in College-square North, and is likely to give a great impetus to art education in Belfast, where hitherto it has been too much neglected. The pupils enrolled during the day were as follow:—Ladies' class, 11; gentlemen's class, 5; schoolgirls' class, 30; schoolboys' class, 20; workmen's (evening) class, 79. In the evening, the head-master (Mr. Lindsay) delivered his inaugural lecture to the workmen's class in the male lecture-room, the walls of which were decorated with drawings illustrating the various stages of art education imparted in Government Schools. There was a large attendance of the members, and also some gentlemen interested in the project. Mr. W. Girdwood presided.

The Coventry School of Art.—The annual meeting of this school has been held in St. Mary's Hall, under the presidency of Lord Leigh. Among those present were the Mayor, several aldermen and councillors. The audience was a large one, and included many of the leading families of the city and neighbourhood. The hon. secretary, Alderman Gulson, read the report, the first part of which was as follows:—

"The committee of the school of art have again to report that they consider the position of the school to be very satisfactory.

In the national competition four medals and two Queen's prizes, the same number as last year, have been obtained, with this difference, however, that last year we had a silver medal.

Five book prizes have been awarded in the third grade section, and eighteen works were selected for national competition. Of these four obtained bronze medals, and two Queen's prizes. Six free studentships (the same number as last year) were also awarded by the Department.

In recognition of the merits of the head-master, a bonus of 10*l.* has been presented to him by the Department, as well as a grant to enable him to visit South Kensington and other art institutions of the metropolis.

An increased number of students have attended the school during the past session, the numbers being 194, against 189 last year. Notwithstanding this, however, the number who passed the March examinations in freehand, model, geometrical, perspective, and mechanical drawing is only twenty-seven, and the successful papers thirty-one, against fifty last year. This falling off—which seriously, though somewhat unfairly, affects the standing of the school—arises from the facilities for holding examinations which are now given to preliminary schools, many pupils passing them before entering the School of Art. To meet this difficulty, the committee have thought it expedient to pass a resolution that those pupils only who present themselves for examination at the School of Art shall be allowed to compete for its local prizes."

The Burslem School of Science and Art.—A preliminary meeting in connexion with the science classes of this school has been held at the Wedgwood Institute. There was a good attendance, and an able address was delivered by Mr. A. L. Sparkes, the newly-appointed master. Mr. Sparkes said he was glad to meet so large a number of students at this preliminary meeting. He was especially pleased to see some working men among those present, and he believed sincerely that the necessity for a knowledge of science was becoming every day more and more apparent to the working classes. They began now to feel that the fate of our English manufactures, and especially that of the pottery manufacture, depended upon the application of scientific principles in its production. It was chiefly this that made English pottery superior to that produced in other countries; and unless we kept up our superiority in this respect we must expect that in a few years our neighbours would supersede us. He hoped that many more working men would come forward to join these classes, for it was principally for their benefit that the committee had invited him to come to the Potteries. Mr. Sparkes then proceeded to give some learned and valuable hints as to the best methods of studying science.

BOYS' SCHOOL FOR THE ROYAL COMMISSION OF THE PATRIOTIC FUND.

COMPETITION.

It having been determined by the members of this Commission to erect a building upon their land at Wandsworth, for the accommodation of 200 boys, in lieu of the present temporary erections, designs were invited from the following architects, viz.,—Messrs. Blomfield, Dawson, Giles & Biven, Saxon Snell, and Tasker.

The design submitted by Mr. Snell has been accepted, and he has accordingly received instructions to prepare the necessary working drawings and estimates for the erection of the building, which is calculated by him to cost 15,000*l.*, exclusive of engineering work, drainage, and fittings.

THE AGED PILGRIMS' ASYLUM.

The building of which we here give an illustration is being erected on a site adjoining the New Islington Workhouse, at Hornsey-rise, by the Aged Pilgrims' Friend Society, and is for an extension of operations now carried on at the society's present Asylum at Camberwell. It is intended for the reception of aged and comparatively destitute members of Christian churches of all denominations.

The nature of the site, it being on the side of a hill, suggested the terraces, which materially aid in giving whatever effect the building may have.

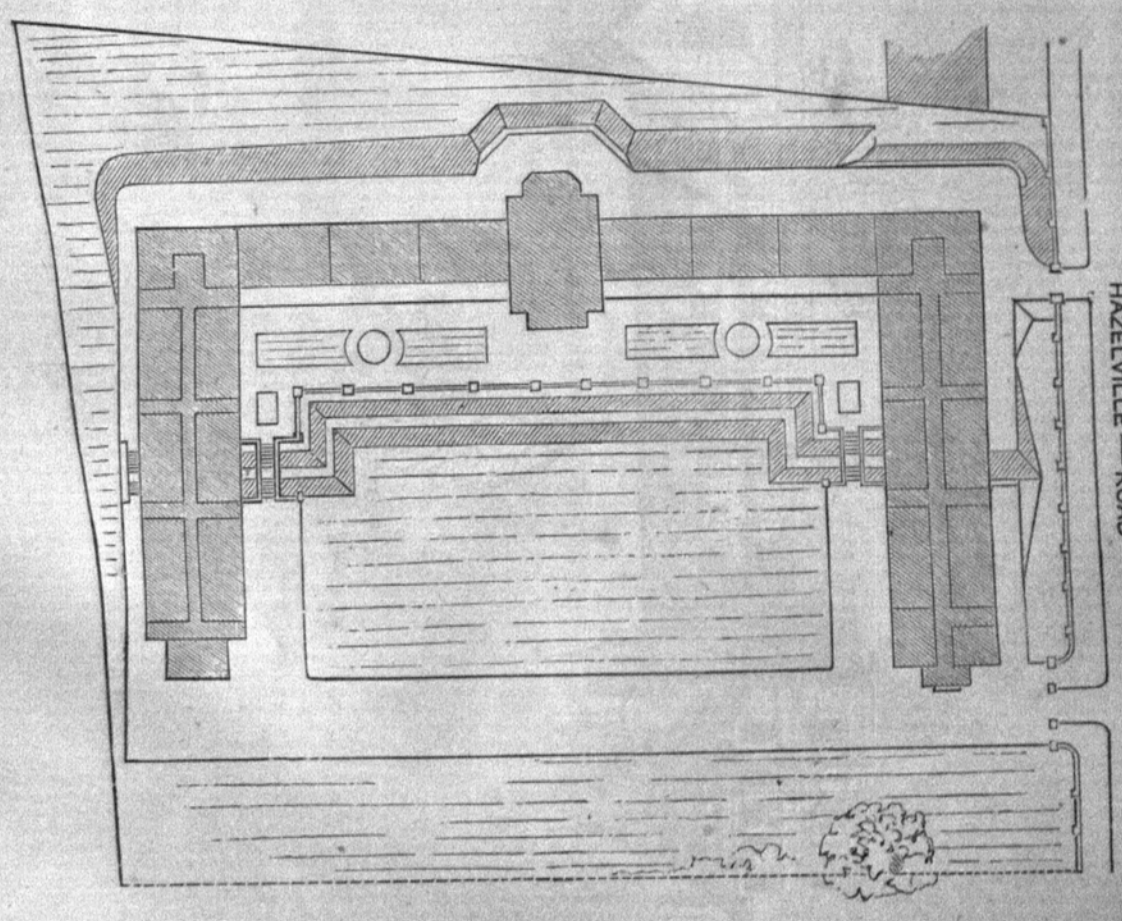
The new asylum provides accommodation for eighty pensioners, and has besides a chapel, reached by covered ways, warden's and matron's apartments, committee and other official rooms.

The design combines the corridor and cottage systems, the wings being devoted to the former. All the corridors and staircases are fireproof. The Dennett arch is used for the upper corridors.

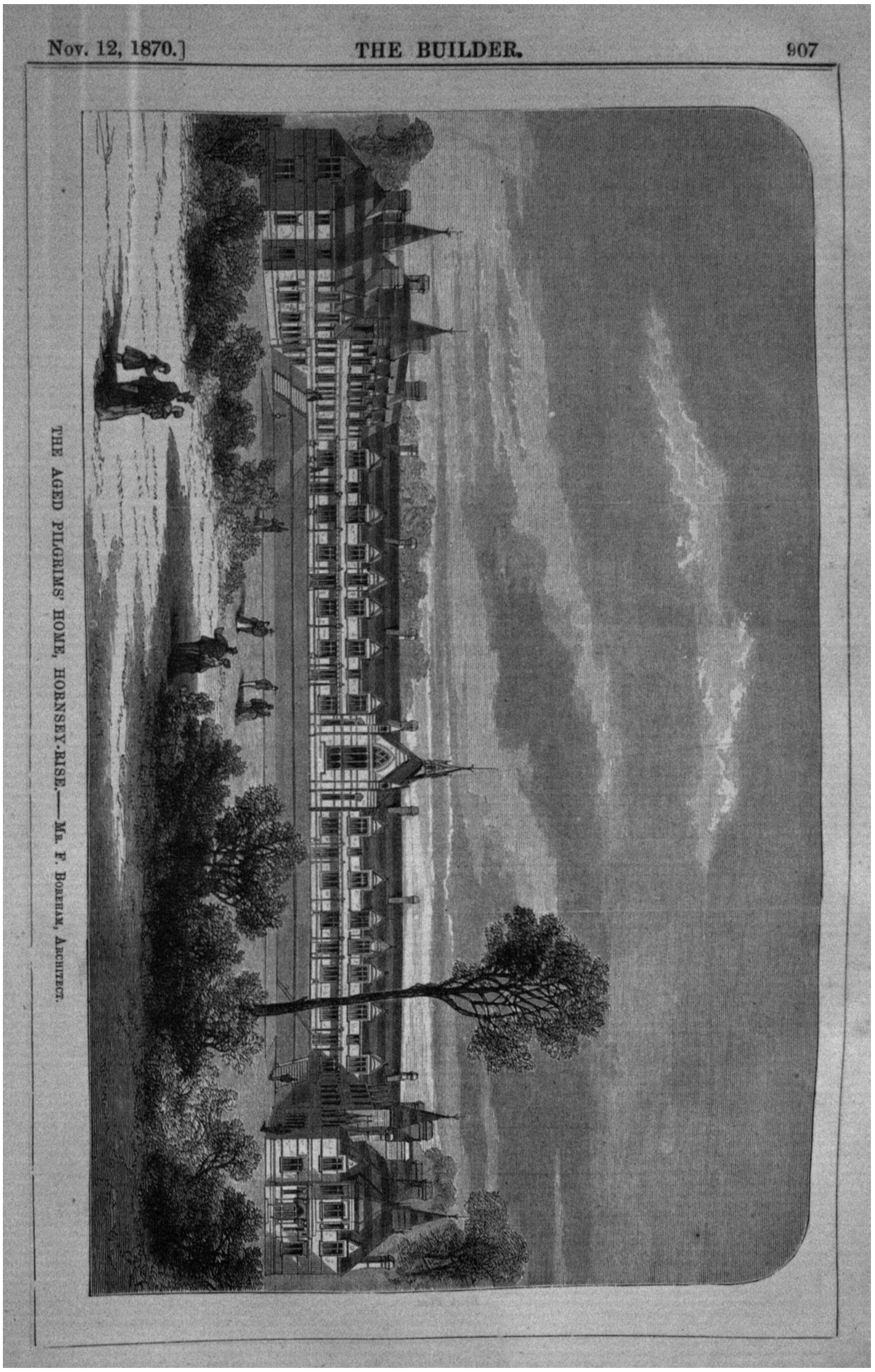
The materials employed are stock bricks, picked for the facings, with a struck joint, and with dressings of Bo. stone. The annexed block plan shows the general arrangements. The contract has been taken for 9,345*l.* by Messrs. Hill & Sons, of Islington, by whom the works are being carried out, under the personal superintendence of the architect, Mr. F. Boreham.*

* In part of our impression the Institution is accidentally described, under the view, as being in Hampstead, instead of Hornsey-rise.

MR. P. C. HARDWICK, *Architect of Lincoln's Inn Hall.*



THE AGED PILGRIMS' HOME.
Block Plan.



THE AGED PILGRIMS' HOME, HORNSEY-RISE.—Mr. F. Bobham, Architect.

THE QUEEN'S THEATRE, MANCHESTER.

On the site of a building in Bridge-street, Manchester, long known as the Amphitheatre, a new theatre has been built under the superintendence of Mr. E. Salomons, architect, capable of accommodating a large number of persons. There are three entrances, all from Bridge-street,—one being to the dress tier, another to the pit, and the other to the gallery. Access to the pit is obtained through an entrance, 20 ft. wide, in which there are two doorways. Both doors will be thrown open as the means of exit; only one, however, is intended as an entrance to this department of the theatre. The pit will accommodate about 1,300 persons, it is stated. We hope it is better adapted for seeing than the pit in some of our new London theatres is. The pit audience, excepting those who desire to stand in the promenade, will be seated on benches. The dress tiers are placed next above the pit, and will be furnished with chairs for the use of 250 visitors; and in the promenade at the back there is standing room for 150 more, —a questionable arrangement. A staircase, 6 ft. wide, gives access to a gallery, capable of accommodating about 800 persons.

Viewed from the stage, the sides gradually slope inwards towards the stage, and branch off from a considerable breadth of front seats. The tiers and gallery are fronted by ornamental scroll-work, gilt and coloured, and upon crimson satin ground. The proscenium is 30 ft. square. The stage is 42 ft. deep from the footlights to the wall, and 75 ft. wide. The theatrical appliances will be best observed when the theatre has been got into working order. Messrs. Neill & Sons are the contractors for the building, and the decorations have been carried out by Messrs. Edmundson & Pollitt.

THE CHAIRMANSHIP OF THE METROPOLITAN BOARD OF WORKS.

The Metropolitan Board have now discussed the question of appointing a chairman, and have ultimately resolved to elect one for twelve months only. An amendment, for the election for an indefinite period, was lost by a majority of 21 to 17. One for the election for three years was lost by a majority of 20 to 4. The motion for the election for one year only was then put and agreed to in the form of an amendment thus worded:—

"That, in view of all the circumstances, it is not desirable at the present time that the permanent appointment of chairman should be made, and that the chairman of the Board be elected for one year only."

It was arranged that the election should take place on Friday, the 18th inst.; that the same mode of election should be followed as on the former occasion; that the candidates should not be confined to the members of the Board; and that a candidate might be proposed and seconded on the day of election.

OPERA AND "GAFFS."

Sir,—Your last article on this subject seems to raise a question as to the principles on which music should be employed in heightening and giving point to dramatic performance, which is of some importance. The tone of the article seems rather to imply a certain disparagement of opera, intellectually, as a style of performance in which the music overrides the meaning, and where it is of less consequence *what* is sung than *how* it is sung. That this is practically so in a large number of popular operas, and that the majority of opera audiences, so far as they can be said to consider the subject at all, look at it in this way, is probably true enough; but there is no necessity in the nature of things that it should be so. The distinction between drama and opera must be kept in mind. The former is a display of the working of human intellects, under the influence of various passions, and exhibiting the result in words and actions; the latter is rather the embodiment and illustration, through the medium of music, of the passions themselves, by which human beings, placed in certain situations, may be supposed to be possessed. The situations being broadly sketched out, the music develops the feelings of those who form part of them; whereas in drama a great part of the interest consists in the gradual evolving of the situations and charartors as the play goes on. In short, drama appeals more to the intellect; opera more to the feelings, by the aid of resources of sound which are denied to the dramatist. The two arts must therefore be judged from different points of view; and the involved turns of thought and reflection, or the elaborations of repartee, which form a main part of what is called "legitimate drama," would be an impertinence in opera, as interfering with the real object of the latter, viz., the expression of feeling through the medium of music. The same thing may be remarked in regard to song-writing generally: verse of an elaborated or philosophic nature is not suitable for setting to music; what the musician wants is a broad idea given him in simple though dignified language, which he can lay hold of and express through his own medium.

To say this, is not to make opera an inferior art, but only a different art from drama. It is as necessary to understand the plot and situation of a good opera, in order thoroughly to enter into it, as of a drama; but the same minuteness and elaboration of language is not necessary, because the object is totally different. With regard to the use of the orchestra alluded to in your article as marking the entrance of a character, it may be worth remarking that something very like this has been done in opera by Weber, who labels the false-tongued female intriguer in his "Euryanthe," with a peculiar serpentine phrase for the violins, which constantly heralds her entry. The idea of descriptive music accompanying a spoken scene was also tried by Mendelssohn in his "Athalie," and has proved, in my opinion, a signal failure; the natural speaking tone of the human voice never blending at all with the instrumental accompaniment. The parts of the cantata where this occurs are always endured with a kind of exemplary fortitude by the audience, and in a recent performance of the work by a provincial musical society, the "recitations" were omitted altogether, to the relief, it is believed, of every one present. H. H. S.

SALE OF LAND, BRIGHTON.

The surplus of the land which the corporation of Brighton purchased for widening North-road, and a portion of that which they have acquired for improving Pimlico, by opening a street at that point running from Church-street to North-road, has been sold.

Lot 1 consisted of a corner plot of freehold building land, adjoining on the west the business premises of Mr. Balcombe, grocer, having frontage to North-road of 17 ft. 8 in., and to Pimlico of 43 ft., and brought 215*l*.

Lot 2 was a plot of freehold building land adjoining Lot 1 on the south, with a frontage to Pimlico of 16 ft. 5 in., having a mean depth of 34 ft. 8 in., 105*l*.

Lot 3, adjoining the last on the south side, having a frontage into Pimlico of 15 ft. 7 in., and a mean depth of 35 ft. 5 in., 95*l*.

Lot 5 was a corner plot of freehold building land, having a frontage to North-road of 17 ft., and to Pimlico (the opposite corner of Pimlico to Lot 1) of 55 ft. 6 in., 325*l*.

Lot 6 was a plot adjoining the last lot on the west, having a frontage to North-road of 16 ft. 6 in. This lot was purchased for 230*l*.

Lot 8, adjoining the last three lots on the west, but having a frontage of 17 ft. in North-road, and of 49 ft. 2 in. in Bread-street, being a corner plot, realised 25*l*. more, namely, 255*l*.

NEW CHURCH, NOTTING-HILL.

ST. MICHAEL AND ALL SAINTS.

The increase of houses at Notting-hill is something to marvel at, especially in that part which adjoins the Metropolitan Railway Station, and is known as Ladbrooke Grove-road. Last week the foundation-stone of a new church was laid here, named after St. Michael and All Saints. As regards the style of the building, the architects have adopted the Romanesque of the Rhine, as far as that style can be applied to a brick church without aisles. The plan consists of a nave, 99 ft. long, exclusive of chancel and western apse, by 43 ft. wide, roofed in one span, with an eastern, western, and southern apse, leaving a northern apse to be added when the ground can be obtained for the purpose. An endeavour is also being made to obtain an extension of the chancel, which, without doubt, will be required eventually.

The material is brick, with Forest of Dean and Red Mansfield stone introduced, and terra cotta, red and buff, for the cornices and arcades, Pether's patent moulded and ornamental bricks will be largely used. The contract is taken for 4,300*l*. by Mr. Cowland, of Notting-hill (exclusive of upper part of tower and fittings), and the architects are Messrs. Edmeston, of Crown-court, Old Broad-street, City. The plot of land, 130 ft. by 60 ft., and a plot for the vicarage are the gift of Messrs. Blake and Parsons, the freeholders.

ARCHITECTURAL EXHIBITION.

Sir,—Although this exhibition has ceased to exist as a separate institution, there seems to be no good reason why it should entirely fall to the ground. I would suggest that the committee of the Architectural Museum should now take the matter up, and admit architectural drawings of new buildings either in course of erection or about to be commenced. There is no need to attempt to make a picture gallery of it, which appears to have been one of the mistakes of the late exhibition; that can be left to the Academy, where only fine drawings are admissible. What should be aimed at in a true architectural exhibition is the obtaining complete sets of working drawings, with details of ornamental and structural parts on an enlarged scale. These would be far more instructive and useful to students, as well as to full-grown architects, who would all learn something from the works of each other.

As very little expense need be incurred in carrying out this suggestion, I hope the committee of the Museum in Westminster will take it into consideration. E. W. T.

NORTHERN ARCHITECTURAL STUDENTS' SOCIETY.

The second winter session of this society was commenced on the 1st inst., by an exhibition of sketches, drawings, and photographs of architectural and kindred subjects. The meeting was held in the ante-room of the Literary and Philosophical Society of Newcastle-upon-Tyne. One of the rules of the Northern Architectural Students' Society requires each of the members to contribute an original sketch once a year at least, and the most interesting feature of the opening exhibition was the series of drawings executed by the members in compliance with this regulation. The series included perspective views or measured drawings of various buildings. The exhibition was of an interesting nature, and augurs well for the coming session of the society.

DEATH OF AN ARCHITECT FROM OVERWORK.

On the 3rd inst., Mr. Bedford, the coroner, held an inquest at St. Martin's Vestry-hall, Charing-cross, touching the death of James Adolphus Carter, aged thirty-three years, an architect, who was found dead at his residence, 20, John-street, Adelphi, on Wednesday, the 2nd inst. It appeared from the evidence that deceased was a very studious, hardworking person, and on Wednesday morning, upon his servant going to his room, she discovered him lying on his back on the floor quite dead. He had a pen in his hand, and upon a desk lay some drawings which he had evidently been executing just before he died. He was in the habit of remaining up all night to work. Dr. Watkin, of King William-street, Strand, said that deceased must have died instantaneously from apoplexy, produced by the excessive amount of work which he accomplished. The jury returned a verdict of "Death from natural causes."

THE PAINTINGS IN THE TUILERIES.

It is not generally known that when the danger of the pictures in the Tuileries from the impending bombardment of Paris became apparent, Mr. Edwin Chadwick, with the concurrence of some members of the Council of the Society, wrote a letter to M. Michel Chevalier, suggesting that the pictures might be sent over to this country for security, and publicly exhibited for the benefit of the French sick and wounded. It was mentioned that her Majesty had allowed her paintings and objects of art to be lent for exhibitions for public purposes, and that such an exhibition of the paintings of France (of which the Society of Arts would undertake the responsibility) might not be deemed inappropriate, even under ordinary circumstances. An answer has only been recently received from M. Michel

Chevalier, in which he states that he had submitted the suggestion to the authorities who had charge of the *Musée*, but that they had already taken their measures. They charged him, however, to convey to the Council of the Society of Arts, and to Mr. Chadwick, their deep acknowledgments for the suggestion.

COUNTRY PATHS.

Sir,—In a letter to the *Builder*, Mr. G. R. Jesse recommends that our public footpaths and byways should be clearly indicated in the Ordnance maps, with the view of securing the right of way. This would, no doubt, conduce very much to the end proposed; but can any one suggest a means for preserving their "pleasantness?" The landholders now, where they do not attempt to stop our thoroughfares altogether, have an unfortunate habit of replacing the mossy banks and flowing hedges of green country lanes with dead stone walls, some 7 ft. high or more, on either side. Any one may see to advantage the effect produced throughout the Undercliff by this kind of improvement; indeed, such is the rage for innovation that one almost fears even to look at any morsel of natural beauty left in that once lovely district, lest you should draw attention to the spot, and thereby insure its destruction. Vectis.

HONOUR TO KING ALFRED.

Sir,—Last October the 28th was the 970th anniversary of King Alfred's death. According to Asser, this worthy and illustrious Saxon prince breathed his last on the 28th of October, the week preceding Allhallows Mass day, at Wilton, the place of his first interment, according to the "Grafton Chronicles," vol. xiv., page 119, and was buried in the Saxon nunnery in that town, upon the site of his own palace, in the year 900. Here he lay two years, and was then removed to Winchester Cathedral; he lay there but one year; then in the year 903 Archbishop Regmund took up his body once more, and, laying it in a royal porphyry monument, bore it to the new minster in the same cathedral close, built by King Edward the Elder, his son, who paid a golden Marcus for every foot of land upon which it stood, where it remained for a period of 209 years. This brings us to the year 1112, when, according to "Ashburton's History of England," the new minster was taken down and re-erected just outside the city walls of Winchester, at a spot of ground then called Hyde Abbey, because the Beauclerk gave the monks, of whom there were twenty-four appointed to sing, a whole hyde of land in a pleasant meadow surrounded by rows of willows, and also by four clear running streams of water. The Norman king gave them ample revenues and liberal charters for their good government and rich grants of land in the county of Hants, for their own maintenance. So the Abbey of Hyde being finished in the short space of two years, and decorated with increased magnificence and becoming splendour, and by a splendid jewelled cross which Canute gave to the new minster, to be placed before the high altar, valued by Dugdale at no less than 4,864*l.* 13s. 4d., in order to show his respect for the monastery in which the good Saxon king was to be last buried, King Henry I., with his queen and courtiers, assisted by Bishop Gifford, of Winchester, and all his clergy in white, carrying crucifixes and palm branches in their hands, went in a grand procession to take up the bodies of King Alfred, his queen, Alswitha, and two sons (Edward the Elder, also their youngest son), and laying them in new coffins of lead, wood, and stone, they bore them from the cathedral close, the walls of the new minster being all levelled now, to Hyde meadow, where in the year 1112 they lowered them into royal vaults prepared for them in the Abbey choir, before the high altar, and here in this latter Abbey Church they reposed for no less than 686 years in peace. But in the year 1798, a Mr. Page rifled the tombs of all valuables, leaving these royal skeletons in the bottom of the vault, at a depth of 6 ft., coffinless and dishonoured, selling the lead from the coffins; and here just where Mr. Page left them, they were found by Mr. John Mellor in 1866, with part of the royal sceptre in the vault, also ermine from the royal cape. The bones of this good Saxon king are now lying with those of his pious queen and two sons, in a little brick vault, in St. Bartholomew's chapel-yard, Hyde-street, Winchester, where the late vicar placed them after they were found. Mr. Mellor has come to London in order to take steps and see if some national monument may not be raised to this good king's memory, for these are certainly the bones of Alfred and no other. Will any one help him?

Antiquary.

SURVEYOR'S CHARGE, KENSINGTON WORKHOUSE INFIRMARY.

Sir,—Referring to a letter in the *Builder* headed as above (p. 871, *ante*), in justice to ourselves as the surveyors appointed by the guardians, to prepare the quantities for them, we trust you will allow us to contradict the rumour your correspondent alludes to, if it does not, at any rate, in its exaggerated state, emanate from his own fertile brain.

1st. It is not true the guardians will pay directly or indirectly anything like the sum named for preparing the quantities.

2nd. It is untrue that any charge for preparing the antities, or for any expense connected therewith, was ncluded in the bills of quantities at all.

Our own cearges are made direct to the guardians, and the builders made their own arrangements for the payment of their surveyors.

After we were nominated by the guardians, we were informed by the architect that the builders had appointed a firm of surveyors to meet us, on their behalf.

We had, and have, no interest, directly or indirectly, in their appointment.

Whatever their charge be, and we are assured that it is less than one per cent. on the gross contract sum, we have no hesitation in saying that it has been more than compensated for to the ratepayers by the increased competition among the builders, this being one of the closest competed for works, for its size, reported in your columns, the three lowest tenders varying less than 230*l.* in a total of over 33,000*l.*, all of them from well-known men, who have carried out satisfactorily similar large contracts.

We cannot help thinking that your correspondent should have ascertained the facts, which, as a ratepayer, he could readily have done, before making such an unwarrantable innuendo against us.

George Lansdown & Pollard.

P.S.—Your impression of October 8th, p. 804, shows the general feeling of builders as to the desirability of appointing two surveyors in these cases.

*** The writer of the letter, signed "Ratepayer," to whom the above has been submitted, declines to accept it as an answer to the "rumour" he referred to. He considers it certain that whether the charge for quantities appeared in the bills or not, the parish, of course, will pay it in one shape or another, and it is this misleading that he objects to. He asks why the builders' surveyors have not enlightened the public on the subject by stating what they are to receive, and whether they did or did not tell competitors, some if not all, that they were to add such and such a sum to their tenders for the surveyors' charges. The whole system of estimate-making and tender-giving requires overhauling.

FROM BLACKFRIARS BRIDGE TO THE PROBATE OFFICE.

Sir,—Here is a pretty wilderness, or worse! The contract for this work, a work which might have been knocked off in a fortnight, or three weeks at the outside, was, it seems, settled in the month of last June; for on the 1st day of July we find that the Metropolitan Board of Works, on receiving from their Works and General Purposes Committee a report, recommending "That the portion of the footways and carriage-ways of Queen Victoria-street, between Chatham-place and the Probate Office, a distance of about 300 yards, be at once formed, at an estimated cost of about 3,300*l.*, and that the works be executed by Mr. Webster, under the schedule of prices attached to the Thames Embankment Contract No. 3," (which he was executing), at once agreed to the recommendation. Now, this is four months ago. Whose the fault of the delay is I know not, but certainly not the Metropolitan District Railway's; for their line does not run under the part of the street in question, except under the eastern half of it, and this was sufficiently finished by the Company before. Jasper.

BRICKMAKING.

At the Norfolk County Court the case William Culley, brickmaker, *v.* Robert Burton, gentleman, North Walsham, has been tried. This was an action to recover 27*l.* 16s. 9d. for making four clamps of bricks on the premises of the defendant, who paid as much into Court as left 18*l.* 1s. 6d. in dispute. The hearing occupied a prodigious length of time, partly from the number of witnesses on both sides, and from other causes; but the facts were simple, and the points of interest very limited. The first clamp having been mostly used, the Deputy-Judge said it was not open for the defendant to dispute their quality; the second clamp was not found fault with; the third clamp was "shaky;" while the fourth clamp had not been delivered, although what that means would seem a little difficult to be understood by the uninitiated, seeing that the bricks were made, as stated, on the defendant's own premises. On behalf of the plaintiff, several witnesses (one of them Mr. James Applegate, brickburner, at Blickling, to the Dowager Marchioness of Lothian), spoke to the bricks made by Mr. Culley as being a very fair sample of clamp bricks; while, unless there was an agreement to the contrary, it was the invariable custom for the person ordering the bricks, and not the brickmaker, to deliver them at his own expense. For the defendant there were also several witnesses of intelligence and respectability, some of whom spoke to the bricks made by the plaintiff not being sufficiently good in quality; and on the same side, Mr. Robinson Cornish, a builder in a large way of business, said that if he ordered 100,000 bricks to be made, he would expect 100,000 bricks that were fit for use, and that he considered he would have a right of set-off against the maker for any that were not capable of being used, although he admitted that in an ordinary way unloading was no part of a brickburner's duty. The Deputy-Judge said he was satisfied that in the original contract there was no agreement by the plaintiff to deliver, but that it formed part of a subsequent contract, and which was shown by the fact that he had made a charge for unloading the first three clamps. As, therefore, he had not delivered the fourth clamp, and the defendant was entitled to make a deduction for the unused bricks of the first and third clamps, his judgment would be for the defendant, with costs,—a decision which seemed to cause the greatest surprise amongst the audience, who had assembled in large numbers to hear the case. The Deputy-Judge, addressing the defendant, said that as the plaintiff must be involved in considerable expense, he hoped that he would deal as fairly as he could with him in regard to the fourth clamp, and allow him for the good bricks, that, when counting, were found in it.—Mr. Burton assured the Deputy-Judge that he would do anything and everything that was reasonable in the circumstances.

A CHEAP SCHOOL AND RESIDENCE.

The Vicar of Wysall, Nottingham, writes a letter to the Suffragan Bishop of Nottingham, thus describing a little school and little residence which have been built opposite the church there:—

"The school contains accommodation for fifty children, being 25 ft. 3 in. long and 16 ft. wide inside. The walls are 11 ft. high. There are four windows 5 ft. high by 4 ft. wide. The porch and chimney, from their workmanship, may fairly be considered ornamental. The residence, which is attached to the school, contains two lower rooms, front room and kitchen. The front room is 12 ft. 6 in. by 11 ft. The kitchen, 11 ft. by 6 ft. 1 in. There are two bed-rooms—front and back; the former, 13 ft. by 11 ft., with bath recess in addition; the latter, 8 ft. by 9 ft. There is also a small pantry under the staircase with lattice window. The outer walls of the whole building are 14 in. thick and built of Broughton bricks, thoroughly well put together. The roof is covered with Staffordshire fancy tiles, placed in tiers after the most approved fashion. There are approved offices to be built. Now for the cost. The school, residence, and offices are built and all materials found, and proper painting done, for an actual outlay of 160*l.* I give the site out of glebe land in the centre of the parish. The parishioners do the carting without charge. The work is done by contract by Mr. Wm. Bryans, of Wysall, a most respectable man of good means, who is willing to erect a similar structure for the same sum in any parish within a circuit of twenty miles. The plan might, of course be extended or otherwise, according to agreement."

One is tempted to ask why it was not done before. The money was raised without the least difficulty. It is to be hoped this school will not be found too *narrow* to admit all in the neighbourhood who require teaching.

"THE CAPTAIN."

September 7th.

The low sun shrinks before the sight,
For sorrow cometh on the sea;
A shadow denser than the night,—
Waves quiver at the agony.

Cries shall be other than the wind,
Whose fitful gusts are eddying round;
As if the very tempest pined
This night its strength should be unbound.

The deep-breathed sighs of drowning men
Shall echo in the ocean roar,
With all heart-lifted prayers,—and then
A silence sadder than before!

The watch is set; and now they say,
"By morn to-morrow we shall tell
How turret-ships the storm can stay,—
The *Captain* 's safe to do it well!"

Ah me! the midnight hour has flown,
While fiercer grows the angry blast;
The strong ship reels, bends, is o'erthrown,
And wild waves o'er its grave have pass'd.

Oh! gallant hearts that cross these seas,
Breathe ye for them this earnest prayer,—
"God rest their souls in His deep peace,
Who that night sank for ever there!

And if as swift a doom should whelm,—
As short a call for us should sound,—
Brave men like them, at watch and helm,
May every one of us be found!"

M. Y. F.

THE CHANCEL GATES IN ST. MARY'S CHURCH, TAUNTON.

Judgment has been given by the Rev. Dr. Wallis on this question in the Consistorial Court at Wells, and is as follows:—"The application in this case is for a faculty to erect and set up, between the chancel and nave of the parish church of Saint Mary Magdalene, in Taunton, two gates framed of iron and ornamented with brass, between the north and south portions of the chancel screen. The objections alleged seem to resolve themselves into this—that such gates are intended to effect an exclusion, either actual or symbolical, of the laity from the chancel—an exclusion which, of course, could not be legally justified. The Court considers that it will be obviating this objection, and at the same time effecting the legitimate purpose of the application, by decreeing, as it now does, that the gates be erected as an architectural ornament on condition only that no bolt, bar, lock, or other fastening shall be attached to them, by which to fasten them, to the exclusion of any person at any time, if closed; and that during the time of Divine service they shall always be kept open."

METROPOLITAN MUNICIPAL ASSOCIATION.

On Monday afternoon a general meeting of the members of this association was held at their offices, Piccadilly, to consider the course to be taken during the ensuing session of Parliament, consequent upon an intimation received from the Government, to the effect that they would not be able to introduce a Bill next year respecting the improved government of the metropolis. Among the gentlemen present were Mr. Chas. Buxton, M.P., who presided; Mr. Thos. Hughes, M.P., Mr. Edwards, Mr. C. H. Elt, Mr. Dresser Rogers, Dr. Pearce, Mr. J. Beal, and Mr. J. Carr. In a communication received from the Home Secretary, in reply to an inquiry made, it was stated that in consequence of the enormous mass of other important business demanding more immediate attention, the question of the government of the metropolis could not be dealt with next session, but it was hinted that it was very likely the question would be taken up the session after.

In consequence of this definite communication from the Government it was decided not to give the usual notice for legislation next session. The question of the gas and water supplies of the metropolis underwent a good deal of discussion. It was resolved to urge upon the Government the propriety of giving effect to the recommendations made by the Royal Commission on water supplies in 1869, and to secure a uniformity of gas legislation throughout the metropolis by a general measure to that effect. Confidence was expressed in the present Government dealing with these subjects in a truly liberal spirit, and the prospect of a satisfactory settlement of them being near at hand justified the association in congratulating themselves that their efforts had been so far as fruitful as they could expect, considering the many serious prejudices and difficulties that had to be encountered. Mr. J. Beal gave a short sketch of the operations of the association since its commencement, and pointed out that although they were disappointed at the Government not being able to take the matter in hand next session, they had much cause for congratulation.

OXFORD ARCHITECTURAL AND HISTORICAL SOCIETY.

It has been decided to continue the series of walks and excursions of this society commenced in the Lent Term. On account of the shortness of the days at this season of the year, it is thought advisable to restrict the walks to Oxford itself, as it is thought that many members may be glad to take this opportunity for visiting some of the antiquities of the University and city. The following is taken from the list just issued by the local secretaries:—

"*XII.—Saturday, November* 12, *at* 2.15 *p.m.*

THE CATHEDRAL AND CHRIST CHURCH.

Mr. J. H. Parker will conduct the party over the cathedral, pointing out the chief objects of interest, and the architectural discoveries made during the recent work of restoration. The party will then (by permission) visit the Chapter-house and hall, and, if time permit, also the library.

XIII.—Saturday, Nov. 19, *at* 2.15 *p.m.*

ST. MARY'S CHURCH AND ALL SOULS' COLLEGE.

The members will be met by the Rev. G. W. Kitchin. At All Souls' College the original drawings of Sir Christopher Wren, and other objects of interest in the library, will be exhibited.

XIV.—Saturday, Nov. 26, *at* 2.15 *p.m.*

NEW COLLEGE.

The party will be met by the Rev. C. Adams, Fellow of New College. From the hall they will proceed to the gardens, to inspect the old city walls, with their bastions. Thence to the kitchen, of the time of William of Wykeham. Thence to the 'Slipe,' or ancient city ditch. Thence to the Muniment Tower and Library, where some ancient MSS. of great interest will be exhibited. Finally, to the chapel and cloisters."

A WAIL FROM WEYMOUTH.

Poor but pleasant Weymouth is to be pitied at this moment, if ever a town was to be pitied. Its unfortunate Town Council have been for some months in a state of chronic *delirium tremens*, in consequence of the issue of a writ of *elegit* being threatened by certain bankers in Dorchester, who loaned the Council, a considerable time ago, a sum of money to carry out town improvements. The Treasury was memorialised for help, as the income of the Pile Pier is insufficient to pay 5 per cent. interest upon the bonds already issued. Thinking a new rate, or rates, would be dangerous work in the present temper of the town, and it having been feared, some weeks ago, that the chairs and tables of the Council-room, with other articles, ran the chance of seizure, one of the members supposed that the maces and chains would follow, and ironically hinted that the worthy aldermen might throw in their gowns into the bargain. Another member was so good as to inform the Council that he had warned them twenty years ago, of their bankrupt state; yet it seems things have gone on since without any energetic attempt being made.

A new mayor is spoken of to be elected this month, and we hope that something more will be done towards putting this pleasant watering-place in a sanitary condition. We would point to the spot known as the Backwater and its surroundings, and would earnestly advise an immediate reclamation of those dismal swamps, and the utilisation of the deep valley of mud and sewage.

It is no fallacy to say that Weymouth, with all the advantages of a beautiful bay, and pleasant environs, is twenty years behind much inferior towns, considering their positions. To effect necessary improvements in the new gardens, and in laying out the Nothe, money is required, and the Treasury will have to be appealed to for 8,000*l.* or 10,000*l.*, with what chance of success we cannot say. Of course the corporation properties will have to be further pledged and mortgaged. There are several back streets and lanes in a filthy condition. For a contrast we might instance the Esplanade and the old immemorial "Granny Dunn's Lane," the former dry and pleasing, the latter impassable in rough weather. Once more let us urge upon the local authorities, the shameful condition of the Backwater, and the many feculent sewers emptying themselves there upon already accumulated crusted mud and filth.

There is a mine of wealth in Weymouth that can be worked with profit, if her local council will only put their shoulders to the wheel. It is the same with a corporation as with an individual who lives beyond his income, both must work if they would pay off their debts. The town council of Weymouth have, however, ways for helping them in the endeavour, and if they at once set to work resolutely, we shall soon cease to hear of any wail from Weymouth.

ACTION FOR ARCHITECT'S DRAWINGS.

EBDY *v.* M'GOWAN.

This case (in Court of Exchequer, November 4th) raised in a new form the question whether an architect is entitled to retain possession of the plans he prepares for a building as against his employer. The plaintiff brought the action against the defendant, a clergyman, for his claim for making plans for a parsonage-house, to be erected at Holmside, in the county of Durham, and at the trial before the Lord Chief Baron, at Guildhall, the jury found a verdict for the plaintiff, damages 106*l.*

Mr. Aspinall, Q.C., now moved, by leave reserved, for a rule to show cause why the damages should not be reduced by 97*l.* 1*s.* The plaintiff prepared the plans, but the house was not erected, and the evidence as to custom was that an architect was paid by commission of 5 per cent. on the actual cost of the building if constructed, and of 3 per cent. on the estimated cost if it was not. Some difference having arisen with regard to the terms of payment, the defendant wrote to the plaintiff that he would send a cheque for his charges, if he forwarded the plans; but he objected to do that, on the ground that it was contrary to the rules of the profession.

The Lord Chief Baron said this was a question of great importance, and possibly of some difficulty, and he was not prepared to say it was not one of law; but he left it to the jury to consider whether, in a contract of this nature, the building not having been constructed, the architect was entitled to retain his plans, and it must be taken from their verdict that they found he was. On one side, it might be said that if an architect was obliged to give up his plans, they might be placed in incompetent hands, and discredit be brought upon his reputation; and also that he would be deprived of the increased remuneration to which he would be entitled when the building was proceeded with. On the other hand, if the defendant paid the 3 per cent., he got nothing in return if the architect kept the plans.

Mr. Baron Bramwell.—If an architect be employed to make plans of a building, and be paid, it seems preposterous, almost childish, to say that he shall retain them. How is the building to be constructed? If parties employ him on the understanding that he is to superintend the erection, and then dismiss him after the plans are prepared, and before the building is completed, he can bring an action for improper dismissal or the loss he has sustained.

The Court granted a *rule nisi*.

The Royal Architectural Museum.—The Marquis of Bute has become a Vice-President of the Museum, and has sent a donation for its building fund.

FRENCH CASEMENTS.

Sir,—I have carefully read the letters of your correspondents on the above subject, and have observed that while they have entered into a variety of ways of hanging sashes, not one of them has grappled with my question.

You in your editorial note said that the French windows did not suit this climate, and one of your correspondents said they had been tried, but had failed; but none of them have entered into a practical or philosophical reason why sashes are preferred to the French plan.

As regards climate, I am utterly at a loss to understand that objection, but suppose it is assumed that the French windows would not suit this cold climate. Now I am an old housekeeper, of more than forty years' standing, and have lived in various houses in England, Scotland, Ireland, and Wales, and am not without experience in the construction of windows. The last house I lived in, in Islington, had sashes, where the cords were often broken, and they shook so on a windy night that they were obliged to be wedged or I could not have slept.

The windows of my present house are hung on the French plan, and are:—1. Easily opened, even by a child; 2. They are easily and safely cleaned; 3. There are no cords to break; 4. They do not rattle or shake; and, 5. The ventilation is perfect and unobjectionable.

In your editorial note you said there was an advantage in the sash, as the upper sash only could be opened for ventilation, whereas on the French plan the whole window must be opened. But I venture to say that you cannot open the upper sash without a down-draught, but you can open the *right* half of the French window, and throw the wind into the left side of the room, and you can sit behind the half so opened, and feel no draught, and *vice versa*. I do not speak theoretically, but practically; and with all these objections to the sash, and all these advantages in the French window, I should be glad to know why we retain the clumsy, dangerous, rattling sash in preference to the French plan.

I may also say that my present windows fit closer and are warmer than any sashes I have met with during the last forty years. M. H.

STAINED GLASS.

Redditch Church.—The large west window of this Church has recently been filled with stained glass by public subscription, to the memory of the late Baroness Windsor. The principal subjects illustrated are Feeding the Hungry, Giving Drink to the Thirsty, Clothing the Naked, Visiting the Sick. The cost was 200*l.* The window was designed and executed by Mr. Preedy, architect, who has also executed other memorial windows, having in view the same object, in two new churches in the adjoining parishes, erected from his designs. The one church, at Webheath, was erected entirely at the expense of the late Baroness Windsor; the other, at Headless Cross, was materially assisted by liberal contributions from the same source.

Caxton Church.—An east window has recently been erected in this church to the memory of Mr. A. J. Wright. The window, which is the work of Messrs. Wailes, of Newcastle, consists of three lights; the central portion representing the Crucifixion, that on the north side the Entombment, and that on the south side the Resurrection. Under the Crucifixion is Christ healing the sick. Above the centre light is a quatrefoil containing the Agnus Dei, and on either side is a trefoil containing an angel holding a scroll, on which is inscribed, "Worthy is the Lamb that was slain."

Cirencester Church.—Two stained windows have recently been added to this church; one to commemorate the ministry of the Rev. Canon Powell, and the other in memory of the late Mr. Robert Croome and his family. The first-named of these windows is placed in the north-west corner of the church. It consists chiefly of four figures, the first representing Melchizedek as a type of the old priesthood, with the bread and wine in his hands, and at his feet is a scroll bearing the words, "I will raise me up a faithful priest." The next figure is that of Aaron, in his high-priest's robes, carrying the rod that budded, underneath which is the text, "Let thy priests be clothed with righteousness." St. John the Baptist is represented in the third figure, in his robe of camel's hair, holding a lamb in his arms, near to which are the Latin words for "Behold

the Lamb," while at the feet of this figure also is an inscription,—"To give knowledge of salvation unto his people." In the fourth and last light is a representation of St. Timothy, dressed as an early Christian bishop, underneath him being the words, "Who hath saved us, and called us with a holy calling." Each of these figures forms a light in itself, and the whole is surmounted by canopies containing six winged cherubim. The expense of the window will amount to about 250*l*. The window to the memory of the Croome family is of a lighter character than the other, and is placed immediately over the chancel arch. It is composed of seven lights, the centre one of which represents our Lord seated in majesty, crowned as King of heaven and earth; and in each of the lights adjoining on either side are the figures of three cherubim, rising one above another. The next figure to the left is that of St. Michael, clad in armour, and holding his sword; while the outer light on the same side represents the angel Gabriel with an olive branch, symbolical of peace. Next to the cherubim on the right side is Raphael, carrying a fish in his hand; and in the last light on this side is represented the Angel of Prayer, with his censor, offering up incense. The figures in this window also are surmounted by six winged cherubim in canopies, which harmonise generally with the other windows of the building. Mr. Hardman, of Birmingham, supplied the windows.

Whitnash Church.—A memorial window to the late Rev. J. W. Kitto, formerly curate of Whitnash, has been placed in the parish church. The work has been executed by Mr. Wm. Holland, of Warwick. It consists of two lights, with tracery in the upper part. Above is the mystic dove "that is covered with silver wings, and her feathers like gold," and below are two baptismal subjects. Nearest to the font is a representation of the baptism by St. Paul of the jailor and his family at Philippi (Acts xvi. 25–34). One of the attendants holds a torch, which throws a ruddy glow on the principal figures. On the ground is a vessel full of water, copied from one in the possession of the rector, which was modelled from a *tazza* of the age of Augustus Cæsar, being part of the plate of the Roman army under Varus, which was routed and utterly destroyed by Arminius, or, as he is called by the Germans, Hermann. It seems that the Romans, when sore pressed in the defiles of the Thuringian forest, buried their valuables in the ground, with the intention of returning the following year. These articles were found in the year 1868, when Prussian engineers were making excavations for the fortifications of Hildersheim. Beneath is inscribed the exclamation of the jailor, on his conversion, "What must I do to be saved?" The other subject is the baptism of the treasurer of Queen Candace by St. Philip the Deacon (Acts viii. 27–40). The chariot and attendants are in the background; the Ethiopian, with his dark skin and richly jewelled dress, stands in the water, in an attitude of prayer; while St. Philip pours the water on his head. Beneath are the words (verse 36), "What doth hinder me to be baptized?" The cost of the window has been defrayed, within, a small sum, by subscriptions paid before its erection.

Chippenham Church.—A stained glass window has just been completed in the south aisle of this church, the offering of Mrs. Elizabeth Lewis, of this town, to the memory of her husband, Mr. William Lewis (late a tradesman in Chippenham), and W. H. Lewis, their only child. The window consists of four lights, and the subjects are:—1st, Hannah bringing Samuel to Eli; 2nd, our Saviour conversing with the Doctors in the Temple; 3rd, our Saviour working at his trade; and, 4th, little children being brought to Christ. In the lower part of each light are represented two of the Apostles; the other six,—that is, including St. Paul and St. Barnabas,—are inserted in the six larger openings in the head of the window. The subjects in each light are surmounted by a perpendicular canopy. The artists were Messrs. Lavers, Barraud, & Westlake, of London. We understand that it is in contemplation to endeavour to raise a sufficient sum to build a new north aisle to the church, and also to restore the edifice.

The Parliament House, Edinburgh.—Among the improvements and embellishments effected on the Parliament House during the recess of the Court of Session not the least important has been the substitution of stained glass for the ordinary common glass in the four windows lighting the hall. The hall being lighted mainly by these windows, considerable difficulty was experienced in the proper execution of the work. One result, a serious one, of darkening the room, would have been to completely spoil the effect of the many specimens of sculpture in the room, as well as of numerous paintings with which the walls are hung. This, and the inconvenience which would result to members of the Bar from an obscurely-lighted room, were difficulties that had to be contended against. The windows are each divided into two lights, terminating in four tracery shapes. There are a large central shield and four smaller ones, enriched with crest, helmet, mantling, &c., in each light, and a crest in each of the tracery compartments. These display a variety of detail and colour, and are placed upon a white groundwork of rough crystalline glass, cut up in various designs of lead-work. The stained glass has been put in by the representatives and friends of distinguished members of the Faculty of Advocates. The first window, or that next the great window at the end of the hall, where are already placed coats of arms of Lords President of the Court of Session up to the present date—is devoted exclusively to the armorial bearings of Lords Justice-Clerk. At the foot of the first light is the following inscription:—

"In memory of Robert Macqueen, of Braxfield, advocate, these shields of Lords Justice-Clerk, of which that of Lord Braxfield, his grandfather, is the central, are placed in this window by E. Anne Macqueen, his widow."

That on the second light runs thus:—

"Dedicated to John Hope, Lord Justice-Clerk, by his son William and his widow."

The second window is devoted to the great legal writers of the Faculty of Advocates, and has the following inscription:—

"Commenced 1869, James Moncrieff, Dean; completed 1870, E. S. Gordon, Dean."

The third window, that of the Deans of Faculty, is inscribed thus:—

"These heraldic memorials of Deans of the Faculty of Advocates have been placed in this window in remembrance of Francis Jeffrey, not the least illustrious of their number, by the trustees appointed to erect a monument to his memory—Sir John M'Neill, James Gibson-Craig, and Cosmo Innes. 1870."

The first light of the fourth window—that of Lords Advocate—bears the following inscription:—

"Dedicated to the memory of the Right Honourable Sir William Rae, Bart., Lord Advocate, by his Niece, Eliza Colt Rae;"

and in the second light are the words:—

"Dedicated to the memory of the Right Honourable Andrew Rutherfurd, Lord Advocate, by his nephews, Andrew Rutherfurd and Andrew Rutherfurd Clark, advocates."

We understand that the whole question of treating the stained glass in these windows was submitted to Sir George Harvey, P.R.S.A., who recommended the present treatment, and who also gave his assistance in superintending the designs and colouring. The whole of the work has been executed by Messrs. Ballantine & Son.

Great Yarmouth Church.—A painted window, to the memory of Mr. Paget, father of Mr. Jas. Paget, surgeon extraordinary to her Majesty, has just been placed in the south aisle of the parish church, next to the memorial window to the late Charles Cory, for eighteen years town clerk of Yarmouth. The three Prophets, Elijah, Elisha, and Isaiah, are represented in the Paget window.

Birstal.—The restoration of the parish church has just been completed by the opening of a new organ built by Mr. Hopkinson, of Birstal, at a cost of upwards of 400*l*. The organ is said to be a very complete and fine-toned instrument. This church has recently been enriched by the addition of two stained-glass windows, furnished by Messrs. O'Connor, of London. The east window of the south chapel has been provided by the present churchwarden of the parish, Mr. John Greenwood, of Birstal, as a memorial of his two sons, and has for its subject "Christ blessing Little Children." In the first light are groups of women and children, kneeling and standing, and a figure of St. John the Divine; in the second, a further group of mothers and children; in the third, a figure of our Lord seated, as if commanding the children to be brought to Him; the fourth, a figure of St. Peter, behind whom stands a mother with her child. The whole is framed in rich canopies, and with delicate bases of grisaille and grisaille tracery. The east window of the north chapel has been put in at the cost of Mrs. Eyres, of Birstal, in memory of her husband. Its subject is the "Call of St. Matthew." In the first light are figures of St. Peter, St. James, and St. John; in the second, a figure of our Lord beckoning to St. Matthew; in the third, St. Matthew is seen emerging from the custom-house, and advancing to meet the Saviour; and in the fourth are figures of a receiver of revenues and of a peasant who is transacting business. The canopies and tracery are equally elaborate with those in the Greenwood window; the bases are of an architectural design, with crown and palm-branch in each.

CHURCH-BUILDING NEWS.

Desborough.—The parish church of St. Giles, Desborough, near Kettering, has been re-opened for divine service, after having been closed for about four months for partial restoration. The edifice was in a very dilapidated,—in fact, in almost a ruinous condition. The work has been commenced, but the resources of the parish are small, and the work is, therefore, one of considerable difficulty. In order to meet the circumstances of the case, the restoration has been divided into three sections, the first of which has just been completed, under the direction and from the plans of Mr. E. F. Law, of Northampton, architect. A west gallery has been taken down, and a west arch has been opened, admitting to view a tower window, which was given to the church more than twenty years ago, by Mr. Biggs, but which was so lost to sight that many persons were unaware of its existence. The sum required for a restoration of the church, exclusive of the chancel, was 1,600*l*., and the first portion of the work has been done at a cost of 530*l*. The roof of the nave was restored some years since, but new roofs have been put to the aisles and transepts. The work already done has been executed by Mr. Kightley, of Northampton, builder.

Stony Stratford.—The foundation-stone of a new chapel has been laid at St. Paul's, Stony Stratford. The new chapel will be erected on the plan of the collegiate churches of the universities, and will combine the usual features of ante-chapel, choir, and sacrarium, with the addition of transepts on either side of the chancel, to accommodate the servants of the college, and for the organ-chamber and vestry. The materials used will be the local stone, of a warm tint, with quoins and dressings of red brick, in uniformity with the existing collegiate buildings. Internally, the arches, strings, and other architectural features will be of red brick, grey granite being used for the chancel-arch piers; the capitals and other sculptured work being executed in Bath stone. The entrance to the ante-chapel will be by a deeply-recessed and moulded door, divided by a central pier supporting a stone carved cross, which will fill the tympanum. Another, but less ornate, doorway will lead from the ante-chapel into the choir. There will be benches for the scholars arranged choirwise, and stalls for the clergy in the chancel. The floors throughout will be laid with encaustic tiles of appropriate design. The roof will be of wagon form, ribbed at intervals, and with moulded cornice tie-beams and shafted king-posts, dividing the space into four bays. This, and the ceiling of the chancel will eventually be decorated in colour. The windows are lofty coupled lancets, under a combining arch, with a circular light in the head. A lofty flight of steps will lead into the chancel, which is to contain an altar of oak and marble combined, and the sacrarium will terminate in a semi-circular apse. There will be windows in this portion of the church, as the walls will eventually be decorated with frescoes representing the life of St. Paul. Above the chancel will rise a lofty spirelet, which will be glazed with toned glass, to throw a softened light upon the altar. The dimensions will be 100 ft. for the total length, and 30 ft. wide, with an internal length of 41 ft. The architects who have been commissioned by the Rev. Walter M. Hatch, the Warden, with this work, are Messrs. Goldie & Child, of London, and its execution from the plans and under the direction of this firm, has been undertaken by Mr. Aveline, builder, Stony Stratford.

Kirby-le-Soken.—The parish church here has been restored and reopened. The work of restoration was commenced in August last, and after the roof of the chancel had been removed the south wall was discovered to be in such a very dilapidated condition that it was found necessary to rebuild it. While in course of being pulled down, a double piscina, in a good state of preservation, with portions of a single-light window above, and in addition the remains of a stone arch, which originally formed the

entrance to a Lady Chapel, were discovered, and have been preserved and refixed in their original positions. The plastering of the external walls has been removed, and the whole refaced with stone rubble. The new open-timbered roof of the chancel is of fir, stained and varnished, and the boarding is covered with felt and plain tiles, surmounted with a crested ridge, the east gable having a moulded stone coping and foliated cross. The two windows on the north side are worked in Bath stone to match the original, and have been filled with cathedral glass. The east window is entirely new. The stained glass is by Messrs. Francis, of London, and the window is the gift of Mr. R. Blanshard, in memory of his wife. The floor of the chancel is paved with Maw's encaustic tiles; and new stone steps to chancel and communion are provided. The benches and book fronts are of oak. The old wooden girder separating the chancel from the nave has been substituted by a moulded arch and jambs in Bath stone. Four new windows, filled with cathedral glass, have also been erected in the nave, and the upper portion of the western arch has been thrown open. The whole of the works have been carried out by Mr. Joseph Grimes, of Colchester, from designs by Mr. Henry Stone, of London, architect.

York.—The church of St. Mary, Castlegate, which is the oldest and most interesting in this city in an historical point of view, has been re-opened for divine service, after undergoing restoration, at a cost of about 4,000*l.*, undertaken by the dean on his own responsibility. In recognition of the liberality of the dean, the three-light east window of the chancel has been filled, at the expense of the parishioners and others, with stained glass, by Mr. Gibbs, of London, the nativity of our Lord at Bethlehem being represented in the centre light, and the adoration of the shepherds in the two side lights. All the seats in the church are free. Besides the lowering of the churchyard, a brick wall and railing, which concealed the church, have been replaced by an open railing on the level of the pavement, which allows of the church being seen down to its base.

Evesham.—It has been decided to restore All Saints' Church. Some months ago the parish vestry passed a resolution affirming the desirability of the restoration, and Mr. Preedy having been requested to report on the condition and requirements of the fabric, he has now done so, and it appears therefrom that the walls have been undermined by vaults and graves till they have become greatly out of the perpendicular. This necessitates their being to a considerable extent rebuilt. Much of the roofing, too, is in a dangerous state, and the architect points out several inconveniences and deficiencies in the present state of the church which he proposes to remedy, such as the widening of the chancel and providing a vestry-room; he also recommends a new reredos. The heating of the church is to be by hot water. Estimated cost of the whole work, 4,500*l.*

Thornton.—The memorial-stone of St. James's Church, Thornton, has been laid with full Masonic honours, by the Earl de Grey and Ripon, K.G., Grand Master of England, in his character of Provincial Grand Master of West Yorkshire. The new building is to take the place of that in which the congregation of St. James's, Thornton, now worship, and will stand opposite to it on the Bradford-road. The total cost of the building will be about 5,000*l.* which sum is being raised by subscription. In the design, which was prepared by Messrs. T. H. & F. Healey, a spire is shown, but this would entail a cost of 1,000*l.* additional. The land for the church has been presented gratuitously by Mr. John Foster, of Hornby Castle. It is worth observing that the Rev. P. Brontë, father of the celebrated authoress, held the curacy of Thornton from 1815 to 1820, when he removed to Haworth. The church has been already built on the east and north sides to a height of 12 ft.; and the memorial stone is at the south-west corner of the chancel.

Bolton.—The memorial-stone of a new church to be dedicated to St. Stephen, Kersley Moor, has been laid. So long ago as 1860, a new church was projected in this locality by the late Mr. Harrison Blair, of Peel Hall; but owing to difficulties mainly connected with its site, its erection was unavoidably delayed. In the early part of this year, when there was a prospect of his object being accomplished, Mr. Blair was suddenly cut off by death. His elder brother, Mr. Stephen Blair, of Mill Hill House, however, generously took up the work which had been inaugurated under such difficulties, and as he was then the Provincial Grand Master of the Order of Freemasons for East Lancashire, it had been arranged that he should lay the corner stone with Masonic honours. But this again was prevented from being carried out, for Mr. Stephen Blair died in a very few months afterwards. The necessary funds, however, having been provided, it was decided that the works should proceed. Miss Blair having spread the mortar, the stone was lowered into position, and Miss Florence Blair then struck it upon the four corners with the mallet, Miss Ellen Jane Blair applied the square to it, and Miss Frances Blair manipulated the level. All four afterwards declared the stone to be laid, in the following terms:—"In the faith of Jesus Christ, we lay this corner stone of a church, to bear the name of St. Stephen, in the name of the Father, and of the Son, and of the Holy Ghost. Amen." As the young ladies were all daughters of the late Mr. Harrison Blair, the handle of the trowel, as well as all the other implements, were constructed of ebony.

Doulting (near Shepton Mallet).—The parish church of Doulting is being restored. Major Paget, M.P., the lord of the manor, has given 1,000*l.*, and the Rev. Prebendary Horner, of Mells, the rector, has undertaken the restoration of the chancel at his sole cost, besides subscribing 1,000*l.* towards the nave and transepts. The farmers of the parish have also contributed liberally, and the masons working in the village (working overtime) have done the west window, the cost of their work being 40*l.*

Cumbwitch.—The newly-built church, dedicated to St. Peter, and erected at the expense of Mrs. Jeffery, widow of the late rector of the adjoining parish of Otterhampton, has been consecrated. The work has been in progress for nearly three years. The builder has been Mr. Squibbs, and the architect Mr. C. Knowles, both of Bridgwater. The edifice, which has a spire, will accommodate about 240 persons. The whole of the sittings will be free and unappropriated. There are several stained-glass windows, the largest of these being the memorial window to the late Dr. Jeffery. The building cost about 2,000*l.*

Hargrave.—The parish church of Hargrave has been re-opened, after a restoration. The church consists of tower and spire, nave, north and south aisles, north transept, chancel, and south porch. The edifice has been restored from the plans, and under the direction, of Mr. W. Lewis Baker, of London, architect, the brother of the rector, by Mr. Henson, of Finedon. The lead work, glazing, and painting, were done by Mr. Downing, of Finedon, and the joiners' work in connexion with the seats, roofs, rood screen, &c., was executed by Mr. Knibbs, of Finedon, and Mr. Coleman, of Tilbrook. The tower and spire, which were in a dangerous state, have been taken down and rebuilt. A new vestry has been attached to the chancel, and the old south porch, which covered up a part of the church door, has been replaced with a new porch, erected by Mrs. Baker and her eight children to the memory of the late rector, the Rev. W. L. Baker. The low roofs in the chancel have been replaced with high-pitched roofs, and new seats have been provided in the nave, the old material having been used so far as it would go. The old screen has been retained, but has been decorated. The painting was restored from traces which remained of the original colouring, aided by advice kindly given by Mr. Butterfield, architect, and Mr. Brandon. The chancel has been newly tiled, and a new plain east window has been put in. The old communion-table remains, but there is a new reredos. There are new seats in the chancel. The west arch has been opened out. The seats, cresting of the screen, pulpit-steps, altar-table, re-table, and other portions of the church, have been carved by the rector, by whom also the remaining portion of the carving will be done as he finds time. The work has been in progress about three years, and in the course of it several stone coffins were found lying in the direction of east and west, near the porch. It was always known, from documents, that a still more ancient church existed before the present one, and this was corroborated by the finding of numbers of interments under and within the present walls. The work of the architect has been without pecuniary remuneration.

Wednesbury Town-hall Competition.—It is objected that the name of the authors of the selected design, "Loxton Brothers," was written on the drawings; further, that one of the firm is a member of the selecting committee.

DISSENTING CHURCH BUILDING NEWS.

Longton.—The new Unitarian chapel and school building at Longton, the foundation-stone of which was laid by Mr. George Melly, M.P., in February last, has been opened. The building is capable of accommodating about 200, a spacious schoolroom being also provided. It has been erected from the plans and under the superintendence of Mr. James Rigby, on a piece of ground on the Stone-road, leased for ninety-nine years by the Duke of Sutherland. The building has cost about 700*l.*, towards which there remain to be obtained about 200*l.*

Wolverhampton.—The United Presbyterians have put up a new church in Wolverhampton. The site is at the corner of the Merridale-road, near to Chapel Ash. Here for more than seven years past the denomination have had a lecture-room, in which public worship has been conducted. Consequent upon the form of the site, the contract is 2,846*l.* The builder is Mr. Cockerill, of Wolverhampton; and the architect from whose designs and under whose superintendence the whole of the works have been carried out, is Mr. Bidlake, of Wolverhampton. The contract is exclusive of the gas-fittings, the pewing, the palisading, and outer gate. The land has yet to be paid for; but the lecture-hall, which cost the congregation 400*l.*, is without burden.

Grantham.—The Congregational church, St. Peter's Hill, Grantham, has been formally opened for public worship. The church occupies a central site at the junction of Avenue-road and Castlegate with St. Peter's Hill, and is adjacent to the new town-hall. The style of architecture adopted is the English Gothic of thirteenth century, the material used for the walling being Ancaster stone, lined with bricks. The church consists, on plan, of a nave and side aisles, divided by two rows of columns and arches. The columns have cast-iron shafts and stone caps and bases, the caps being carved with conventional foliage. The arches are 22 in. thick; they are of brick, plastered; and, together with the iron shafts, are decorated in colour, in a style suited to the material. The diameter of the shafts is 11 in., and there being no side galleries, the entire height of the columns, including the capitals and bases, is not more than 10 ft. There is a gallery at the end of the church opposite the pulpit, and a transeptal projection of the north bay of the east aisle forms a recess for the organ. Behind the pulpit is an arched recess, the jambs of which are ornamented with detached shafts with carved caps and moulded bands and bases. The upper part of the wall at the back of this recess is filled by five lancet windows with trefoil cusping in the heads, the mullions between them having engaged shafts with moulded caps and bases, and the lower part with ornamental gabled and geometrical traceried panelling of pitch pine. The pulpit is low, and of the platform type. It is of red deal, and ornamented with flat geometrical tracery and attached shafts. The windows behind the pulpit are to be filled with stained glass, and the panels below them with illuminated ornament and inscriptions. The front gable of the church, which faces towards Avenue-road has a five-light geometrical traceried window and three lancet lights below it, and is flanked on the east side by a gabled entrance porch. The front next Castlegate is divided into four bays each, including a two-light geometrical traceried window, finished with a parapet of open arcading. The north bay has a high-pitched transeptal gable. At the south-west angle of the building is a turret, 70 ft. high, with lancet openings, having engaged shafts and moulded arches, the upper part of the spire being crocketed and finished with a wrought-iron cross. The entrance doorways have moulded arches and jambs, the latter having detached shafts with moulded caps and bases. The church seats 600 persons, and there are two vestries at the north end. Beyond the vestries is a school or lecture-room capable of accommodating 250 adults, and adjoining and communicating with it by folding doors are three class-rooms, each seating 20 persons. An infant class-room for 30 infants, kitchen accommodation, and other conveniences are also provided. A minister's house, containing three sitting-rooms, kitchens, and seven bed-rooms, has also been erected on the site. The cost of the church, schools, and manse, including all charges, exclusive of the cost of the site, will be under 4,000*l.* The work generally has been executed by Messrs. Rudd & Son, the plumber and glazier's work by Mr. Lincoln, the carving

by Mr. Matthews, and the painters and decorator's work by Mr. Green, all of Grantham. The church is heated by Blake's patent hot-air apparatus. The architect was Mr. James Tait, of Leicester.

Liverpool.—The foundation-stone of a new Congregational Chapel, to be erected at the corner of Ullet-road and Aigburth-road, Prince's Park, has been laid by Mr. Wm. Crosfield, J.P. The chapel has been designed with special reference to the site it is to occupy. The ground-plan consists of a nave and transepts, with deeply-recessed organ-chancel, deacons' and minister's vestries, and lavatories. At the angle formed by the junction of the two roads there are to be a lofty tower and spire, about 160 ft. to the summit of the finial. In the base of the tower there is an archway, which forms the entrance to the north gallery, and also to the body of the church. There are two other entrances at the north end of the building,—one in the centre, which opens into a corridor which leads right and left to the aisle doors; and the other by a porch on the east side of the main front, which communicates with the aisle doors. There are two other entrances at the south end of the church, folding doors to keep out draughts being fixed to each of the entrances. The main front to Ullet-road rises with a gable in the centre to a height of about 60 ft., and has a traceried window in the upper part, 20 ft. high and 10 ft. wide, the tracery being of geometrical character, and belonging to the Middle Pointed period of English architecture. There is an arcade of windows at a lower level to light the entrance corridor, also having geometrical tracery, with shafts and carved capitals dividing the arcade into triplets; one at each side of the central entrance doorway, and the three front doorways have deep moulded pillars, with carved capitals. The tower and spire form the leading features of the front. The whole of the exterior is constructed in Burnley parpoints on case-mated courses, with yellow Stourton plinth groins and other dressings, and lined with brick-work inside, the spire being cased entirely of yellow Stourton stone. The gables and summit of the spire will be finished with metallic crosses and finials from the architect's designs. The interior will give sitting for about 800 persons. The benches will be open, of pitch pine, stained and varnished, and a lining of pitch-pine timber, with carved cresting, will run round the inner walls of the church below the cills of the windows. The roof is to be open-timbered, stained, and varnished, with space between the spars to ensure an equable temperature both in summer and winter. The windows will be glazed with cathedral glass, worked into a Gothic pattern in quarries or diamonds of several tints of colour. The apse will have a coved and arched ceiling, with shafts, panels, and other enrichments. The church will be heated by hot-water apparatus. The design for this church was selected out of about twenty designs in competition. The architect is Mr. H. H. Vale, of Liverpool. Mr. Cawley is the clerk of the works. The contractors are Messrs. Wishart & Irving, of Southport, builders; Mr. Greenwood, of Southport, is the sub-contractor for the masonry; Mr. Burnand, of Southport, for the plumbing, staining, and glazing; Mr. Bimson for the brickwork; and Mr. Rogerson, of Liverpool, is the carver.

Throckley (*Newcastle-upon-Tyne*).—The new Wesleyan Methodist Chapel at Throckley, which was commenced about twelve months ago, has now been opened. This building occupies a site on the north side of the turnpike-road from Newcastle to Corbridge, &c., and forms a prominent object for some distance. The chapel consists of a nave and east aisle: at the south end of the latter is placed the porch with the bell-turret. Part of the aisle is screened off for a vestry. The nave, 58 ft. long by 23 ft. wide, presents a gable 38 ft. high towards the road, in the lower part of which are three lancet lights, with a circular six-foil window over them. The turret is placed at the south corner of the nave; it is upwards of 60 ft. from the ground to the top of the nave. The spire is slated, and finished by a wrought-iron finial and gilded vane. The north end of the nave is apsidal, and surrounded externally by a wrought-iron cross with three lancet lights (which are intended to be filled with stained glass); these windows are more ornamental than those at the side, as befitting the Communion end of the chapel. The roof has a wagon-headed ceiling, lined with wood, with oak-moulded tie-beams, ring-post and moulded ribs. The aisle, 10 ft. wide, is separated from the nave by an arcade of metal columns, with wood-arched braces supporting the beam carrying the end of the tie-beams. The roof over this part is a lean-to one. The pulpit is placed near the west wall on the chord of the apse, and the seats are arranged on each side of a central aisle, the east aisle being devoted to Sunday-school children and the choir. A considerable number of the seats are free, though no difference is made in their appearance from those which are intended to be appropriated. Sittings are provided in the nave for 186 adults, and in the aisle for 19 singers and 40 children,—total, 245, which, by the use of chairs, could be raised to accommodate 280 persons. The building has been constructed by Messrs. Hunter (mason); Burn (joiner); Walker & Co., of Percy Works, Newcastle, (ironfounders); Patton (plumber); Wilkinson (plasterer); Dawber (slater); Richardson (painter and glazier), all of Newcastle. Mr. F. R. N. Haswell, of North Shields, was the architect. The entire cost has been 1,000*l.*, defrayed by Mr. William Stephenson, of Throckley House, in conjunction with his sons, Mr. William Haswell Stephenson, Mr. Hugh Stephenson, and Mr. Chas. Stephenson.

Books Received.

The Proverbs of Solomon, classified and arranged as Maxims for Conduct and a Guide through Life. London: HAMILTON, ADAMS, & Co.; Liverpool: WALMSLEY.

IN this little book we have a successful attempt to classify and bring together the Proverbs of Solomon. These are given under twenty-seven heads, such as, "Wisdom and Knowledge," "Education," "Strife and Contention," "Industry and Idleness," and so on; and a mine of wisdom they present. The idea was an excellent one, and it has been well carried out. The initials to the preface, J. A. P., will be recognised by many more of our readers than those who dwell in Liverpool. The binding, although simple, is very elegant in design.

The Post-Office Directory of the Building Trades: comprising every Trade and Profession in any way connected with the Architectural and Building Trades throughout England, Scotland, and Wales. London: Kelly & Co. 1870.

AN advertisement of this work in our pages a few weeks ago will serve to show the number of professions and trades included in it. The index of towns and places mentioned occupies twelve pages of the work. Architects may object, and with some reason, to being included without distinction amongst the "Building Trades;" however, that is a matter of taste, and does not interfere with the fact that the book contains a large amount of information, in its own direction, and will be found very valuable by many. Lists are given of the Metropolitan Board of Works, Metropolitan Vestries, District Boards of Works, and of the Borough and County Surveyors.

VARIORUM.

A WRITER in the current number of the *Art Journal*, in the course of an article headed "Rome the Capital of the World of Art," says,—"Italy flocks to Rome. Sites are already demanded for ministries, for manufactures, for commercial establishments. A new life is thought to await the Eternal City,—a third period of European empire. We shall be asked to send some of the money now accumulating in our banks to give an impetus to Roman regeneration. We have only one word to say on that subject. We hope that regenerated Italy,—to date, let us say, from the 2nd of October, 1870,—will abandon that bad practice of Naples, of Sardinia, and of other integral portions of *Italia Una*,—of sucking the orange, and then throwing away the skin. Let our artists, our engineers, and our capitalists, remember the story of the Brindisi Railway, of the canalisation of the Po, and of other works carried on for the exclusive benefit of the Italians by money found in this country, and see that for any aid they may render their rights are largely and indisputably secured. Otherwise, even for the unveiling of the Rome of Augustus, or of the treasures hidden by the Tiber, let us suggest that, for the very first time in her history, since the age of Odoacer, *Italia fara da se.*"——The Registrar-General, in his last "Quarterly Return," writes,—"The sewage question has made such progress that towns are no longer excusable for neglecting to deal with it. It is agreed that the excreta should no longer be thrown into rivers, but be rapidly restored to the earth; and this can be done by the dry or wet method, according to the circumstances of each case. What is wanted in human habitations is sweetness and cleanliness. Then follow, as the next great social work of the age, improved dwellings for the industrious classes, and the demolition of all the fever-dens of the land. This is a European question; and while it is the unhappiness of two great nations on the Continent to be engaged, at the expense of millions of treasure, in deadly struggles for the destruction of each other's lives, it will well become England to open the better way, and to employ the powers science and wealth have placed in her hands for healing men, and for developing the physical and the diviner faculties of the English race. Should her example excite emulation in other countries, we shall see, besides the great struggles for the supremacy of races, common efforts to improve the conditions of life, to diffuse knowledge, to mitigate human suffering, to increase virtue, to elevate intelligence, and thus to conquer the standing armies of disease and death; works of vaster amplitude and greater difficulty than the capture of cities, the subjugation of nations, or the destruction of armies."

Miscellanea.

Hothouse Ventilation.—Mr. Ormson, at the last exhibition of the Royal Horticultural Society at Oxford, exhibited the model of an improved house, in which provision was made for winter ventilation by arranging that the air should be duly warmed before its admission. The form of pipe employed is that of a hollow cylinder, possessing a heating surface equal to four 4-in. pipes, or more, if necessary. The external air is admitted through a tube, nicely adjusted to valves in the front wall, and connected to the interior of these cylinders, where, as a matter of course, it becomes rarified, and consequently forced out through openings provided in the cylinders into the house, by the denser air which is constantly pressing in. Such a stream of warmed air rushing into either a hothouse or apartment will keep the air of such places constantly moving, through the displacement of the cooler particles by the warmer, and *vice versâ*, so long as a portion can find escape; and this Mr. Ormson has provided for by hollow rafters having zinc panels, perforated on their lower side, and a valve at the top of each rafter communicating with the chamber shown at the top of the back wall, through which it escapes by iron gratings in the face of the wall above the glass roof. This plan of heating may be used in public and other buildings where large masses of people congregate together, as the vitiated air constantly passes away, and its place is supplied by fresh warmed air, which, unlike the cold draughts usually admitted by windows, would neither chill tender plants nor give cold to individuals. The hothouses themselves are rendered light in appearance by the use of very large glass of great thickness, and the plan of glazing is such that no putty is exposed to the destructive influence of the atmosphere.

The Society of Arts.—The session will commence on Wednesday, November 16th, when the opening address will be delivered by Lord Henry G. Lennox, and when the Prince Consort's prize, awarded at the last examinations to Mr. Edward Turner Sims, as well as the medals awarded for papers read during the past session, will be presented. Amongst the papers arranged for we find,—November 30th, "On Peat and its Profitable Utilization," by R. M. Alloway, M.A.; December 7th, "On the American System of Associated Dairies, and its bearing on Co-operative Farming," by Mr. H. M. Jenkins; December 14th, "On the Study of Economic Botany," by Mr. James Collins; December 21st, "On a Method of Lighting Towns, Factories, or Private Houses by means of Vegetable or Mineral Oils," by Mr. Albert Silber. The first course of Cantor Lectures for the ensuing session will be "On Artists' Colours and Pigments," by Mr. Frederick S. Barff. It will consist of five lectures, to be delivered on Monday evenings, November 21st and 28th, and December 5th, 12th, and 19th, at eight o'clock. These lectures will treat of, "The Nature of Colour," "Chemistry and Manufacture of Colours and Pigments," "Vehicles and Media used in Painting," "Fresco and Silicious Painting," "Destructive Influences on Colours," &c.

Arbitration in Trade Dispute.—Mr. T. W. Saunders, the recorder of Bath, to whom was referred the dispute between the master carpenters and joiners of the city of Bath and their workmen, has made his award. The operatives demanded the Saturday half-holiday, and an advance in their wages of a farthing per hour. The employers were willing to concede the half-holiday, but resisted the claim for higher wages. In his award, Mr. Saunders says:—"I am of opinion,—1st. That the operatives, in seeking a reduction of two working hours on the Saturday afternoon are seeking for what is very desirable in a national point of view, and is daily gaining the support and adoption of the public at large; 2nd. That the rate of wages does not admit of the operatives giving up what will amount to 1s. per week; 3rd. That the proposed reduction of two working hours upon each Saturday while the masters pay the same amount to their workmen will not sensibly affect them, inasmuch as any small increase to their customers in the price of work, as such increase of wages will entail, will be almost wholly unperceived and felt. Taking these views into consideration, and believing that a concession of the demands will greatly tend to elevate the character of the operatives, improve their school, and cement that respect and regard for their employers, which I have reason to know they sincerely and worthily entertain, I award and determine that two hours be deducted from the present working hours on each Saturday afternoon, and that the rate of wages be increased by one farthing per hour for every working hour throughout the week, it being the intention of this award that the two provisions shall operate upon each other, and that the mere one of wages shall continue so long only as the operatives choose to avail themselves of the reduction of hours."

Fitting Locks.—The fitting of locks to trunks and boxes, although a very handy and useful art, is one which frequently puzzles the household mechanic; and this not because it is in the least degree more difficult than many other operations which he performs with facility, but because it requires a little knack. The mistake generally made is that of fitting the lock and hasp on together, instead of first securing the lock and fitting the hasp to it. The first proceeding should be to cut away the wood inside the box sufficiently to allow for the body of the lock. When this is done, the plate upon the upper surface should be let into the edge of the box, so as to be quite level with it. The keyhole should then be cut; and if the key passes freely the lock may then be screwed into its place. The hasp should next be placed in its proper position in the lock, and the key turned as it would be if the box were locked, and the lid brought down with a smart blow upon it. In most staples or hasps there are two projecting pins left which will enter the wood of the lid, and secure the hasp while the key is unturned; when, if the lid be raised, the hasp will be found in the exact position required. The lid should then be marked round the edge of the staple plate, which should be let into it to the required depth, and fixed with screws. If this operation be carefully performed, there will be no difficulty in making the lock work well at the first trial.—*From "Cassell's Household Guide."*

The Perpetuum Mobile. — The search for perpetual motion is itself a perpetual motion: there is no putting a stop to it; they are still at it, and in long-headed Scotland too. A new invention by Mr. J. Millar, of Dalry, "consists of obtaining and transmitting motive power by a novel arrangement of mechanism, consisting of levers on which the motive force as weights or pressure acts through small toothed wheels, acting and rolling in and on the teeth of an internal rim, fixed or stationary disc or segment thereof;" and in an invention of Mr. J. S. Johnstone, of Ayr, "the mechanism consists, under one modification, of a series of weighted levers arranged in a framework, each lever being connected with a spring balance. By means of suitable mechanism the levers are raised in succession through a certain height, from which they are allowed to fall, and in falling they act upon the spring balance in such a way as to depress it; the surplus force above referred to is transmitted so as to lift or raise corresponding levers, and also to act upon stop-wheels for driving a revolving shaft." It is just the old story over again: the perpetual motion moves in a circle in more senses than one.

Monumental.—The Thorneycroft equestrian bronze statue of the Queen, which has been erected on the Esplanade, in front of St. George's Hall, Liverpool, has been unveiled. The cost was 5,000*l.*, like that of the late Prince Consort, which is its companion statue. It was cast in bronze by Messrs. Elkington & Co., at their works in Birmingham. The statue is about 14 ft. 6 in. in height, from the top of the pedestal, and 14 ft. from the head of the horse to its tail. Her Majesty is represented as attired in a riding-habit, which reaches almost to the base of the figure, and wearing a round hat adorned with a plume of feathers. The statue weighs upwards of 4 tons, and stands upon a metal plinth, which is embedded in the granite pedestal.——A movement, which will have the support of all who appreciate the services rendered to musical art in this country by the late Mr. Balfe, is on foot for the purpose of placing a monumental tablet to his memory in Westminster Abbey.——It is proposed by a number of captains, as a token of their esteem for their deceased brother officers Coles and Burgoyne, that every captain on the active list shall subscribe one guinea to erect a private memorial, the style of which and the place of erection to be hereafter settled.

The Ashmolean Museum.—On the 26th ult., Mr. J. H. Parker gave an inaugural lecture on the history, the present state, and the future prospects of the Ashmolean Museum, as now proposed to be used for the assistance of the students of history and archæology. It was addressed to the members of the Oxford Architectural and Historical Society. He said that he hoped to give new life to the museum and to the society by combining them together. The contents of the museum, with the addition of the large collection of 2,000 historical photographs now being arranged in it, would afford an ample supply of subjects for study, and illustrations of them. The different members of the society could study them, each taking up and following out his own branch, and when he had mastered it, giving a lecture or a paper upon it, for the benefit of the other members who had not had the same opportunity of studying it.

Moulding Metals.—Messrs. W. & R. Mushet, Dalkeith, first prepare a "pattern" or pattern plate of the article to be cast from in either iron, wood, or any other suitable material in the following manner:—The pattern is placed upon a suitable plate or board set upon a solid bed of sand. A moulding-box, about 6 in. larger than the pattern every way, is then placed upon the plate or board; the pattern or patterns being set fair in the middle, it is rammed up and turned over on another solid bed of sand; the board is then removed, and the parting carefully made. The top part of the box is then put on to the part already rammed up, which is the drag; the gate-pins are put in suitable places, and this also is rammed up. The two parts are then separated, and a frame of wood, about ½ in. thick and 1½ in. broad, is placed on the parting, keeping the pattern fair in the middle.

Tile-cutting Machine.—The invention of Mr. O. F. Monfort, of Dearborn, U.S., relates to improvements in machines for cutting the tile as it issues from the tile-machine in continuous form into short sections, and consists in the application to the carrying-table between two endless belts of a fine wire or steel-plate cutter, stretched between an arm and a shaft, by which the arm is revolved so as to be revolved around the shaft and forced through the tile while moving along, the cutter being arranged to move with the tile while cutting, and back again after cutting, and the arm which supports the swinging end of the cutter being arranged to pass between the cut sections. The invention also comprises a carrying-table for passing the cut pieces beyond the arm which supports the cutter suspended on the shaft, and held in position by a weight, so that the arm which carries the cutter may pass around it.

Town-hall for Dorking.—We are informed that a company is in process of formation, having for its object the purchase of the West Square Buildings, in West-street, to convert the same into a town-hall. The property belongs to Mr. Cubitt, M.P., who has expressed his desire to facilitate the matter in every way. A meeting of gentlemen taking an interest in the subject has recently been held, and we believe a prospectus of the company will be issued.

Drainage of the Fen Country. — The safety of the fen country is again under consideration. Mr. Hawkshaw considers that the capacity of the siphons, sixteen in number, is not enough to take off the water in an extraordinary flood, and if siphons were to be used ten more would be required, which would cost 14,600*l.* He also recommended an engine and boiler, at a cost of 1,300*l.* Regarding the question of a sluice being better than siphons, Mr. Hawkshaw states that a sluice will effectually discharge the waters of the greatest floods without any aid from the siphons. The cost of the sluice and new cut would be 50,000*l.* The commissioners were decidedly of opinion that siphons should be used if any provision were made, as at present funds would not admit of a large outlay.

Opening of Glasgow University Buildings.—The new University Buildings at Gilmorehill, Glasgow, the foundation stone of which was laid in October, 1868, by the Prince of Wales, were opened on the 7th instant. The buildings have been constructed from plans prepared by Mr. Gilbert Scott, and will cost, including the common hall and University hospital, which have not yet been built, a sum of nearly half a million. The hospital is not an essential part of the University scheme, and will be partly of a public character. The opening proceedings took place in the lower hall of the new Hunterian Museum, which is capable of accommodating about 2,500 persons. As we have illustrations of the buildings in preparation, we postpone particulars.

The Old Brick Houses, St. George's-place, Hyde Park.—The public will be glad to learn that these houses, nearly a century and a half old, are at length to be demolished, and two mansions erected on their site. They will be remembered as having been long the disfigurement of one of the finest spots in this locality, One of the houses was the residence of Liston, the comedian, for some years.

The Foreign Market Site.—At a special meeting of the Court of Common Council, at which a report respecting the proposed Foreign Cattle Market was brought up by the Markets' Committee, it was recommended that the building should be constructed upon the site of the late Deptford Dockyard, which was to be purchased by the Corporation for 91,500*l.* The result of a long discussion was the adoption of the report by a large majority.

Closing of the Derby Fine Arts Exhibition.—This successful exhibition, after having been open for six months, is now closed. It has been visited by 150,000 persons, and a profit of 1,350*l.* has been realised, for behoof of the funds of the local volunteers, as intended. Throughout the exhibition no one article was injured or abstracted, and not even a pocket picked.

Inventors at the Annual International Exhibitions. — The Commissioners for the Exhibition of 1851 notify that an Act intituled "The Protection of Inventions Act, 1870," 33 & 34 Vict., cap. 27, has been passed for the protection, amongst other things, of the exhibitors at the Annual International Exhibitions. It contains provisions similar in character to those which were effectual for the protection of inventors at the Exhibition of 1862.

Strike in Edinburgh.—Between 200 and 300 stonemasons have struck work in Edinburgh in consequence of a proposal having been made to reduce their wages from 6¾d. to 6¼d. per hour, equal to about 2s. 4d. per week. The reason given for the proposed reduction is dulness in the building trade.

Honour to Artists.—Mr. Louis Desanges, the painter of the Victoria Cross Gallery, has been elected a member of the Royal Academy of Lisbon, in succession to the late Sir Charles Eastlake. The election has received the Royal approval, and the diploma has been forwarded to the newly-appointed member.

Election of School Boards. — Special orders have been issued by the Education Department for the immediate election of School Boards in twenty-one boroughs in England and Wales. These include Liverpool, Manchester, Birmingham, Leeds, and Sheffield.

Dingwall.—The foundation stone of a new public hall, which is being erected by the Fingal Lodge of Freemasons at Dingwall, has been laid with Masonic honours.

The Portraits.—The portrait in our present number was prepared from a photograph by Mr. John Watkins, of Parliament-street, as also was that of Professor Hayter Lewis, in a recent issue.

TENDERS.

For house at Hendon, for Mr. F. F. Buffen. Mr. Thos. W. Willis, architect. Quantities supplied by Mr. L. C. Riddett:—

Crabb & Vaughan	£4,484	0	0
Gammon & Sons	4,482	0	0
Henshaw	4,374	0	0
Deards	4,196	0	0
Capps & Ritso	4,000	0	0
Adamson & Sons	3,893	0	0
Scrivener & White	3,883	0	0
Sharpington & Cole	3,877	0	0
Hawkes (withdrawn)	3,400	0	0
Alternative Designs			
Gammon & Sons	£3,475	0	0
Scrivener & White	3,368	0	0
Crabb & Vaughan	3,341	0	0
Henshaw	3,249	0	0
Sharpington & Cole	3,234	0	0
Deards	3,216	0	0
Adamson & Sons	3,141	0	0
Capps & Ritso	3,100	0	0
Hawkes (withdrawn)	2,413	0	0

For a new church at Newark, exclusive of foundations. Mr. R. Evans, architect:—

Ward	£3,505	0	0
Conquest	3,448	0	0
Rudd	3,350	0	0
Halliday	3,315	0	0
Fretwell & Henderson	3,168	0	0
Young	2,965	0	0
Johnson	2,930	0	0
Hodson & Co. (accepted)	2,757	0	0

For five houses, Cavendish Road, Balham, for Mr. J. De Manchs. Messrs. Lander & Bedells, architects. Quantities supplied:—

Wells	£6,490	0	0
Tarrant	6,295	0	0
Macfarlane & Nance	5,725	0	0
Adamson & Sons	4,893	0	0
Everidge	4,879	0	0
Beaves	4,775	0	0
Ingram	4,135	0	0
Grover	4,090	0	0

For building new "Old Women's Ward" at the workhouse for the Godstone Union, Bletchingly, Surrey. Mr. Alex. R. Stenning, architect:—

Scragge	£1,149	0	0
Wallis	1,144	0	0
Peskett & Taylor	983	0	0
Cooke & Greene	979	0	0
Macey	978	0	0
Ellis	950	0	0
Blott	950	0	0
Cook	934	0	0
Nightingale	929	0	0
Harrison & Sons	892	0	0
Bayes & Ramage	889	0	0
Emmett	888	0	0
Dover & Co.	879	0	0
Woodward	867	0	0
Morris	850	0	0
Blackmore & Morley	845	0	0
Daniel	835	0	0
Battley	834	0	0
London Building Company	824	0	0
Wright, Bros., & Goodchild	795	0	0
Galyer	785	0	0
Bish	780	0	0
Parsons & Telling	751	0	0
Gregory	741	0	0

For additions to St. Matthew's Workhouse, Bethnal-green. Mr. W. Mundy, architect:—

Liddiard	£6,374	0	0
George	5,647	0	0
Markett & Thurgood	5,640	0	0
Hearle	5,575	0	0
Nightingale	5,555	0	0
Ennor	5,485	0	0
Blackmore & Morley	5,480	0	0
Perry & Co.	5,429	0	0
Wigmore	5,357	0	0
Brown & Sons	5,299	0	0
Tully	5,296	0	0
Morter	5,223	0	0
King & Sons	5,159	0	0
Wood, Bros.	5,150	0	0
Capps & Ritso	5,135	0	0
Eaton & Chapman	5,109	0	0
Blease	5,094	0	0
Langmead & Way	4,980	0	0
Hill, Keddell, & Waldram	4,975	0	0
Hurst	4,969	0	0
Wright, Bros., & Goodchild	4,940	0	0
W. & F. Crocker (accepted)	4,617	15	9

For making up, &c., Osborne-road, Acton, Middlesex Mr. E. Monson, jun., surveyor:—

Blackmore	£629	0	0
Hare	451	0	0
Pizey	375	0	0
Chalker	354	0	0
Porter	336	0	0
Simpson (accepted)	295	0	0

For finishing four houses at Herne-hill. Mr. Joseph Gibson, architect:—

Evans	£880	0	0
Russell	775	0	0
Bruty	770	0	0
Robson	719	0	0

For part of excavator's work for nine warehouses, Monkwell-street. Mr. Herbert Ford, architect:—

Peacock	£527	0	0
Maycock	369	12	6
Hobman	339	17	8
Jay	306	0	8
Slater	289	1	0
Wilson	288	15	0
Pooley	285	0	0
Hopkins	280	11	0
Perkins	272	5	4
Portlock	256	7	0
Reddin	245	12	8
Crane (accepted)	241	10	5

New Post-office, Maidstone.—The tender of Mr. J. G. Naylar, builder and contractor, Rochester, having been accepted after considerable delay caused by the estimates being in excess of the sum granted, the works are now to proceed; amount of tender, 3,147*l.*

Tenders "for the Supply of Glass Cases and Plate Glass to be used at the International Exhibition of 1871."—As the list of tenders contained in the *Builder* of the 5th inst. is calculated to convey a wrong impression, and to do me serious injury, I must request the insertion of the following in your next issue:—My tender, 1,725*l.* 15s., included not merely the "frames," but also all the plate glass and glazing. My reparate tenders for the "frames," only amounted to 1,173*l.* 15s.—JOHN DREW.

*** Our list was official.

TO CORRESPONDENTS.

Mr. Gowans's address in type.—J. K. (ditto.)—T. E. K. (ditto).—E. T. B. (thanks).—H. H. S, (ditto).—B. A. (some of the bishops will not consecrate chapels so situated).—J. W.—T. H. W.—F. C.—W. G.—P. G. S.—J. C.—C. A. R.—E. T.—Miss L. H. R.—C. & S.—C. C. H.—Col. S.—E. M. T. & Co.—E. W. T.—M. Y. F.—J. K.—J. H. S.—J. H. L.—A. B. R.—A. H. G.—R. Y.—J. D.—E. S.—F. E.—G. L.—Mr. S.—Jasper.—J. N.—C. W.—J. H.—F.—J. F.—W. W. B.—R.—T. W. B.—D. T.—T.

All statements of facts, lists of Tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO SUBSCRIBERS.

The Publisher cannot be responsible for TESTIMONIALS *left at the Office in reply to Advertisements, and strongly recommends that* COPIES ONLY *should be sent.*

Advertisements cannot be received for the current week's issue later than **THREE o'clock, p.m.,** *on THURSDAY.*

☞ *NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No.* 1, *York-street, Covent Garden. All other Communications should be addressed to the "Editor," and* NOT *to the "Publisher."*

SPECIAL NOTICE.

In consequence of the Reduction in the Newspaper Postage, Subscribers within the United Kingdom will be supplied with THE BUILDER *direct from the Office, at the rate of Nineteen Shillings per annum,* PAYABLE IN ADVANCE.

ADVERTISEMENTS.

TURNER & ALLEN,

ART FOUNDERS AND ENGINEERS,

201, UPPER THAMES STREET, LONDON, E.C.

MANUFACTURERS OF

LAMP PILLARS, GAS LAMPS, FOUNTAINS, GATES, RAILING, ETC.

Either Plain or Bronzed, in the Highest Style of Art.

HOT-WATER AND GAS ENGINEERS.

Sole Importers of BARBEZAT'S FRENCH IRONWORK, and Publishers of French and English Books of Design, 2 vols. Price 25s.

Just published, in one handsome volume, price 28*s.*

RIDDELL'S CARPENTER, JOINER, STAIR BUILDER, and HAND RAILER. Complete. "To one and all this work will be found most useful."—*Builder.* Edinburgh THOMAS C. JACK. London: SIMPKIN & CO.

In crown 8vo. with 150 Woodcuts, price 10*s.* 6*d.* cloth.

A RUDIMENTARY MANUAL of ARCHITECTURE: being a Concise History and Explanation of the principal Styles of European Architecture, Ancient, Mediæval, and Renaissance; with their chief Variations described and illustrated. To which is appended a Glossary of Technical Terms. By THOMAS MITCHELL, Author of "The Stepping-stone to Architecture." London: LONGMANS, GREEN, & CO. Paternoster-row.

TEXT-BOOKS OF SCIENCE.

Now ready, the First Two of a New Series of Elementary Works on Mechanical and Physical Science, forming a Series of Text-Books of Science, adapted for the use of Artisans and of Students in Public and Other Schools. Edited by T. M. GOODEVE, M.A., Lecturer on Applied Mechanics at the Royal School of Mines. In small 8vo. with Woodcuts, price 3*s.* 6*d.* each Work.

METALS: their PROPERTIES and TREATMENT. By Professor ROXAM.

ELEMENTS of MECHANISM. By T. M. GOODEVE, M.A.

*** The Prospectus, with the List of other Works in preparation in the Series, may be had of all Booksellers.

London: LONGMANS, GREEN, & CO. Paternoster-row.

MR. EDWARDS'S WORKS ON WARMING AND VENTILATING

In royal 8vo. with 149 Illustrations and a Portrait, price 12*s.*

OUR DOMESTIC FIRE-PLACES. By FREDERICK EDWARDS, Jun. New Edition, re-written and enlarged, and adapted for popular reading.

"Bears on every page the mark of careful research, and abounds to such an extent with useful matter that we should desire to see it studied and its contents brought into actual practice by all those who are in any way concerned with the important branch of domestic economy on which it treats."—*Chemical News.*

Works by the same Author, uniform in size.

The VENTILATION of DWELLING-HOUSES and the UTILIZATION of WASTE HEAT from OPEN FIRE-PLACES; with 107 Illustrations. Price 10*s.* 6*d.*

SMOKY CHIMNEYS, their CURE and PREVENTION. Fifth Edition, revised; with 40 Illustrations. Price 2*s.* 6*d.*

The EXTRAVAGANT USE of FUEL in COOKING OPERATIONS; with an account of Count Rumford's Economical Systems, and numerous Practical Suggestions for domestic use. With 47 Illustrations. Price 5*s.*

London: LONGMANS, GREEN, & CO. Paternoster-row.

PENFOLD ON RATING. SIXTH EDITION.

This day is published, 8vo. price 10*s.* 6*d.* cloth; or 13*s.* 6*d.* half-bound law calf,

PRACTICAL REMARKS upon the PRINCIPLE of RATING RAILWAY, GAS, WATER, and other COMPANIES; Land, Tithes, Buildings, Manufactories, and other Properties. Sixth Edition, Re-written and Extended. By J. T. KERSHAW and W. MARSHALL.

This edition, which is double the size of the last, contains the whole of the Law of Rating, both for the Metropolis and the Country; the various sections being arranged side by side in a methodical sequence, showing the order of their application, chronologically. It also notices all the more important decisions of the Court of Queen's Bench on questions of rating up to the present time, and illustrates the manner in which the principles thus laid down are practically applied to rating.

Some remarks are added in this edition, having reference to the enormous amount of rates, of which railway companies are shown to be annually escaping the payment, through the present anomalous system of rating their property; with some suggestions as to the best method of effecting a remedy, and thereby adding to the present rateable value of property to such an extent as would relieve the ratepayers, in many of the parishes through which lines of railway pass.

London: KNIGHT & CO. 90, Fleet-street, E.C.

Just Published, price 3*s.*

THE REPORT of the SEWAGE COMMITTEE of the TOTTENHAM LOCAL BOARD of HEALTH on the DISPOSAL of the SEWAGE of their District. Edited by P. P. MARSHALL, C.E. Surveyor to the Board. E. & F. N. SPON, 48, Charing-cross.

Bound in cloth, 1*s.* 6*d.* or post free for 21 stamps.

STABLES and STABLE FITTINGS.

"Includes a considerable amount of useful information on the subjects of which it treats."—*Builder*, August 27, 1870.

ST. PANCRAS IRON WORK COMPANY, Old Saint Pancras-road, London, N.W.

DRAWINGS of all kinds accurately PREPARED, by R. R. COOPER, 21, Anerley Vale, Norwood, S. Communications by post will receive prompt attention.

PARTNERSHIP.—A Gentleman of experience is desirous of purchasing a SHARE in an established ARCHITECTURAL PRACTICE.—Address, ARCHITECT, care of Clement Dowling, esq. 15, Duke-street, Adelphi.

PARTNERSHIP.—An artistic Architect, of some experience in Country Houses, is desirous of PURCHASING a SHARE or PARTNERSHIP in a well-established and prosperous ARCHITECT'S OFFICE.—Address, TRUTH, care of Mr. Tritton, 46, Drummond-street, Euston-square, London.

TO ARCHITECTS.

WANTED, by a gentleman who has been upwards of eight years in the profession, a JUNIOR PARTNERSHIP with an ARCHITECT in good practice: or a Managing Clerkship with a view to Partnership.—Address, at first, 516, Office of "The Builder."

AN APPRENTICE (Out-door) WANTED to the SIGN, FACIA, and GLASS WRITING and Embossing. Premium moderate.—Apply to J. W. F. PEARCE, Writer, 31, High-street, Kensington, W.

TO BUILDERS' FOREMEN AND CLERKS OF WORKS.

AN experienced CLERK WANTED, accustomed to the management of house property, and competent to keep books.—Apply by letter only, stating previous engagements, age, salary expected, and reference to last employer, to L. C., care of R. Clarke, Printer, 51, Threadneedle-street, E.C.

TO PARENTS AND GUARDIANS.

WANTED, in the Office of an Architect and Surveyor, an ARTICLED PUPIL. Must be well educated, and with some knowledge of drawing.—Particulars as to premium, &c. apply to A. K. I. B. A. Office of "The Builder."

WANTED, to APPRENTICE a Youth, aged 14, to a WRITER and GRAINER.—Address, Mr. COLLIER, Outfitter, 4, Islington-green.

WANTED, in a Drawing Office, a practical MAN, who can make drawings and estimates of iron and lead work, and take off quantities. He must be a thoroughly competent man.—Apply to Messrs. WALKER & EMLEY, Neville Iron-works, Newcastle-on-Tyne.

WANTED, a thoroughly competent BUILDER'S TIMEKEEPER.—Apply, by letter only, with full particulars, to G. H. D. 35, De Beauvoir-crescent, London, N.

The Builder.

VOL. XXVIII.—No. 1450.

The Water Supply of the Country.

THE supply of water requisite for the growth of the crops throughout the United Kingdom is a subject which has been scandalously neglected. It is one of the utmost economic importance. Taken in connexion with those provisions for artificial harvesting to which we have, on former occasions, directed the attention of our readers, it is a matter that may make all the difference between plenty and famine. Our incredible national neglect of a branch of natural engineering that was practised, with abundant returns, more than 4,000 years ago, has been punished, in the present year, by the loss of a large portion of our green crops. We helplessly look up to the sky for the precious showers which we know to be uncertain in their distribution, at the time when, by a due employment of the means which science places at our disposal, we might render a large portion of our pastoral acreage independent of the caprices of the seasons.

There are few subjects of such ever-fresh interest to the Englishman as the weather. Abroad, indeed, it is said of us, that the changes to which our climate is so unusually liable form the sole topic of our ordinary conversation. There is, further, this grave peculiarity attendant on the investigation; that in no branch of study are the prime laws and master-facts so simple, while the details, by their extreme multiplicity, have as yet entirely mocked every effort to reduce them to order. Not only are more direct observations taken, by special and ingenious instruments,—as to the barometric pressure, the hygrometric charge, the thermometric condition, of the atmosphere, the prevailing currents of the winds, the form of the clouds, and the actual amount of rainfall at determined stations,—than are devoted to almost every other scientific inquiry, but the attention of the most patient observer, and the most clear-sighted discoverers has been turned, from the earliest recorded period of history, to the subject of pre-indications of the weather.

In spite of all this thought and observation, prediction of the change, or the permanency, of weather remains pretty much what it has been from the earliest times. In one respect, indeed, we have obtained a very valuable advance. The all-but instantaneous means of communicating intelligence afforded by the electric telegraph, by furnishing us with particulars of atmospheric pressure at widely different points, enables us to foretell meteoric movements, within certain limits, with considerable accuracy. This is, indeed, a species of prediction; but it is that kind of fore-knowledge which consists only in the certitude of what is actually taking place at some distance, the course and sequence of which is comparatively certain.

While the knowledge of scientific men is so limited that but one single ray of light, to which we may hereafter refer, has yet been thrown on the future of the question, it is not surprising how prodigious is the amount of ignorance which persons by no means uneducated are not ashamed to own, and even to cherish, as "weather wisdom." The function of the barometer, simple as it is, is for the most part altogether misunderstood. We cannot recal the title of a single work that is altogether satisfactory on this subject. Thus people will consult "the glass" with a blind faith that its rise and fall have a certain message for them; nor are they taught, by constant disappointment, that local indications of barometric pressure form but one, out of many, of the series of elements that have to be taken into account in forecasting the state of the weather even for a quarter of a day.

Again, the known connexion of the syzygies and oppositions of the moon, with the tidal phenomena of the ocean of water that surrounds the earth, has led many to fancy they can take a short cut to the knowledge of the unknown influences of this planet on the aërial tides and currents. Tabulated observations, indeed, show that no coincidence has been detected between the arrival of the moon at her "quarters," and the changes of the weather. But the theory is convenient, and therefore, with many adherents, it is waste of time to demonstrate that it is false.

Astrologers have also set themselves to predict the weather. It is, very likely, a matter much to be regretted that the heroic and incredible ignorance, as to positive science, of most of those who seek to read the cypher of the stars, has deterred really scientific men from any examination of the important physical facts which are obscured by astrological jargon. The view of the solar system as an arrangement of celestial electro magnets, the relative position of each of which affects for the moment the condition of every other, is one of which it is impossible to deny the propriety. In a careful study of the effect of the several aspects of those closely inter-related bodies may yet be detected some clue to the great question.

But could laws of observation, or even of prediction, be thus arrived at, the grand difficulty of local difference would still remain. The causes of weather seem to be capriciously local. Astronomic influence, if such there be, is to be regarded as affecting the entire planet, or at least its great geographical divisions. But what does the inhabitant of the valley of the Severn or of the Mersey care, comparatively speaking, for the state of the weather at Greenwich?

The main laws affecting the general rainfall of our country are, as we have said, few and simple. The tendency of warm air to ascend, and of cold air to descend, is one. The power of air to hold water in invisible suspension, in proportion to temperature, is another. On this, and on the radiant nature of heat, depends the phenomenon of the dew. The rotation of the earth on its axis, and the deflexion produced, on a northward or southward current of air or of water, by the constantly decreasing rotary velocity of the surface over which it passes, is a third. Gravitation, as modified by the relative positions of the sun, the earth, and the moon (the gravitative disturbance affected by the other planets is almost inappreciable), has a powerful effect on the sea, and has an undetermined effect on the air.

Beyond all these known forces there are abundant indications of the existence of one that is as yet unknown, and, for the most part, unsuspected. It would seem to be a species of terrestrial electro-magnetism. The existence of this force, on the proper appreciation of which we hold that a true comprehension of meteoric phenomena must depend, is indicated by two very distinct sets of signs. These are to be found in the province of physics, and in that of organic life. The action of the barometer, and the habit of many animal tribes, point to a telluric impulse being the origin of atmospheric change.

We have spoken with discontent of the teaching of scientific books on the subject of the barometer. As to that part of the theory of this instrument which we owe to its great inventor, the admirable Pascal, there is no room for doubt. The function of the varying column of mercury in denoting the actual pressure per square inch on the exposed surface of the fluid metal, is undoubted. But the point to which we refer is this. The mean gravity of the earth, and the variation of its action from the pole to the equator, is known. The difference between the lengths of the pendulum vibrating seconds at the equator and at the pole is 2·38 French lines, or rather more than the two-hundredth part of the mean length. Slight local variations may be caused by the greater or less density of subjacent strata, but they are inconsiderable in proportion to that due to the spheroidal form of the planet. And the permanent and unvarying character of terrestrial gravity, measured by the length of the pendulum, is further proved (if need be), by the comparison of the rate of chronometers timed by pendulum, with those timed by springs.

How comes it to pass, then, that the weight of the atmosphere, as measured by the barometric column, varies to the extent of 10 per cent. and upwards? A movement of the quicksilver from 28·5 in. to 31·0 in., in the same locality, is within the limits of observation. A movement of ½ in. in a few hours,—indicating an increase or diminution of the force with which the atmosphere presses on the earth at that spot by one-sixtieth part, or more than 1¾ per cent.,—is far from uncommon. To the current answer to this question, that "the difference of pressure is due to the weight of vapour in the air," no reply is necessary; the less so because the mercurial column is generally highest in fine bright weather, and neither wet, fog, nor extraordinary heat, involving a corresponding degree of suspension of vapour, are directly indicated by the delicate balance.

The true explanation is, that for the pressure of the atmosphere on the earth, there *is* a cause other than a physical one,—a cause of that nature which, in default of better definition, we call electric, or magnetic. This cause we may speak of as the varying electro-magnetic attraction of the earth. In connexion with the import of this universally-observed phenomenon we may mention the abundance with which sparks are struck from flints on the road by the shoes of horses, by the nailed boots of rustics, or by an iron-shod staff, on the approach of rain.

A curious disturbance in the aërial perspective of distant objects, such as islands and promontories, giving the effect of a mushroom supported on a stem to the former, and of a projecting, overhanging *nose* to the latter, has been observed in the Baltic and in the Mediterranean, as preceding a storm by some thirty hours.

The habits of animals often afford sure prognostics of weather. Virgil mentions the activity of the ant before rain, a circumstance to which the numerous encampments of various species of ants in Italy call attention. The care of the spider in setting her gins, and the high or low flight of birds, have also been referred to as weather prognostics. The latter, however, often considerably varies in a very short period of time.

The only place in Europe inhabited by any of

the monkey tribe is the Rock of Gibraltar. The troops of Barbary apes that yet remain in that ancient haunt of their race are accustomed to change the side of the hill on which they congregate six hours before a change of wind. As this change is a matter of great importance to vessels striving to enter or to leave the Mediterranean, this prediction is eagerly watched for.

In Devonshire a habit similar to that of the Gibraltar apes has been observed in the roosting of pheasants.

Leaving, with this indication of the path in which we think farther light may be collected, this portion of our subject, we wish to note that, according to the careful deductions of Lieutenant (now Admiral) Maury, the water which descends on the surface of Great Britain is evaporated, by the heat of the sun, from the equatorial ocean. In the pages of that interesting writer, the course of the clouds may be traced, till they shed down on our soil a rainfall varying from 24 in. to 60 in. in depth in the course of a year. The evaporation which supplies the rain for the temperate zone is calculated to be not less than 16 ft. depth of water per annum. At Calcutta an evaporation of 15 ft. has been measured. At a latitude of between 10 deg. and 20 deg., in the Bay of Bengal, an inch is said to be evaporated daily. On the Khasia mountains, in Bengal, the flood that is wrung out from the passing clouds, as from a sponge, is said to furnish the enormous depth of 600 in., or more than 8 fathoms of water. The rapid floods that fill the Atbara, and bring wealth to Egypt, have a similar origin.

On the fifty-seven millions of statute acres of Great Britain, if we take the average rainfall at 36 in. in the year, there descend in that time two hundred thousand millions of metric tons of water. This is what nature affords us on the average. The season must be altogether unusual that does not provide us with a third of that unimaginable quantity. What do we do with it?

The answer is very simple. We get rid of it as fast as possible. In the first place, every house, with the exception of those thatched cottages that are rapidly disappearing from the face of the country, has a special provision for collecting rainfall, and not for storing it for use, but for turning it, in the shortest and most ignominious way, into the nearest river. Instead of collecting it for the service of the farmer, or even of turning it, as used to be the case in many a country town and village, through a bright open course, where it babbles as it runs along, and from which lead off many a grip and sough to gladden the adjoining fields, we get it underground as rapidly as we can, and there so deal with it that first it dilutes our valuable sewage to an extent which renders it both worthless and unmanageable, and then it goes on to poison our rivers, to kill the fish, and to spread the germs of disease through the country. That is what we do with our rainfall.

Every drop of water that we use in England (except salt-water baths) comes direct from heaven. Nature has given us certain reservoirs, of which we make use without observing their extent, or taking any of the steps which would so well repay the cost proper for providing auxiliary storage. On every porous soil, of sandy or gravelly nature, the rainfall penetrates till it is arrested by the first impervious stratum lying below. On this bed the water accumulates. If the clay forms a basin, the water forms a subterranean lake. It accumulates till the basin is full; then it runs off at the lowest places on the rim. These escapes are what we call springs. They often occur not far from the summit of a hill. Climb Skiddaw, or ascend Stanmore-hill. In each instance you will find the summit dry. It consists of a light, porous soil. A little way down either highland, however, you find bog, or wet clay, or out-soak of some nature. Why is the ground at once so damp and so elevated? Simply because the rain collected over the whole top of the hill there runs over the edge of the clay which keeps it back. In chalk the case is somewhat different. Water seems to pass through chalk in a broken subterranean river, the level of the underground stream dipping rapidly as it approaches the natural outfall. The principle is the same as in more perfectly porous soils, but that modified form of gravitation which we call capillary, or possibly chemical affinities not distinctly understood, affect the level of springs in the chalk.

To our habitual waste of the gift of heaven, that careless stupidity which allows the rain to fall where it will, and takes no heed for the drought of to-morrow, we have one exception. We practise, where it can be done without expense, the most barbarous mode of irrigation yet known in the world. We know that for the support of vegetation we require an intermittent supply of water. Roots may be drowned, no less easily than fish may be drowned, by the improper supply of that element on which their life depends. We know by the world-old experience of Egypt that even the intermission which takes the form of a flood, and covers the face of the soil with a rich transported mud, has a wonderfully fertilising power. We also know that semi-aquatic plants—reeds, rushes, bog-beans, and water soldiers—that grow in permanently wet, marshy situations, are useless to the farmer. With this knowledge in our possession we irrigate thus. Through a valley, which with a little aid from the engineer might be made a very garden of Eden, we lead the rain, or rather let it lead itself, in parallel channels. We bar any efficient draining by water-mills and weirs; we occupy from a fifth upwards of the whole area of the valley with water-channels. We sometimes put down a wooden sluice or two, and we keep the whole soil, while grass ought to be freely growing, in a perpetual sop. As we do not cover all the ground with water we obtain abundant crops from about half the acreage; flags, reeds, coarse rushy grass, and water-courses, occupy the remainder.

Unirrigated England presents a noble field for the beneficial activity of the engineer. What we have already done in the way of deep draining, and of steam ploughing, is enough to teach us how much more may thus be effected. But to these important parts of farm engineering should be added a comprehensive and adequate system of dealing with our abundant rainfall. Lakes and reservoirs, open or subterranean, where available, fair channels for the conduct of the surface water, and for its distribution wherever gravity would allow, steam power for the service of those districts where it might be requisite, or at all events that use of the windmill to which, in our fen districts, we have recourse for getting rid of superfluous water, should be applied to raising supplies for irrigation. If this were combined with proper arrangements for watering, and not drowning the land; for the intermittent supply of the precious element, and for its reception unsullied by ill use, into rivers abounding in fish—we should add a money value to a large portion of our twelve million acres of permanent pasture, to say nothing of our sixteen million acres under cereals, green crops, and artificial grasses, that would be equal to the present fee simple.

The individual farmer in England may be hindered by a thousand obstacles from either perfectly irrigating or properly draining his land. But let us look a little wider than individuals; let us look at districts of country, grouped according to water-sheds and water-courses. Considering the rainfall on which we can with certainty calculate, it is the fault of the owners and farmers of each such district if they suffer long from drought.

ARCHITECTURAL DRAWINGS.

Our object under the present heading is not, we hasten to inform the sensitive professional reader, *infandum renovare dolorem*, to renew at the present instant the irritating questions concerning the legal ownership and value of architectural drawings, recently so much debated, and still, in a sense, devoid of a satisfactory and definitive settlement. But the debate on that ground suggests also some consideration as to the architectural value of drawings as a medium in carrying out a building, the extent to which they are or may be used or abused, the degree of importance to be attached to them, and the amount of time and trouble which may be reasonably bestowed on them; considerations which are not without their bearing upon the everyday routine of professional practice, in regard to matters wherein we are all too liable to run in a groove, without sufficiently estimating the practical value of some of the work on which much time and Indian ink are consumed in many hundreds of offices.

In the columns of the *Daily Jupiter*, as we know, it hath been duly laid down that an architectural drawing or design is a thing of nought; that the design only can be said to exist when bricks or stones have been superimposed, and drawing is superseded by the result which it only foreshadowed in a partial and (to amateurs) incomprehensible manner. Nor are there wanting professedly architectural critics who openly avow a somewhat similar heresy. We are told that the builders of our cathedrals needed not drawings; they were always on the spot, architect and mason being then one and indivisible, and the materials evidently fell together as naturally as possible, without any drawing or measuring beforehand; we have even an instance of a modern architect (not English) pointed out as the nearest modern approach to the excellence of the Mediæval builders, on the strength of the fact that he could neither write nor draw, and nevertheless did in some way contrive and build a domed church for his native town. Modern practice is usually in very much the opposite direction. Drawing is the first thing the architectural student learns, and for a length of time, in many cases at least, the only thing he learns. And with the majority of architects, excepting those whose name and fame have brought them into the position of consulting architects rather than ordinary practitioners, the greater part of the working time is spent over a drawing-board and T-square, personally and by proxy; and every detail appears on paper in its proper place before it is carried out in the actual building.

We might say that the *juste milieu* lay between these two extremes, did we believe that the former, the supposed Mediæval habit of building by the rule of thumb without any drawings at all, had ever existed, at least in connexion with anything worth calling architecture. The discovery of the Cologne Cathedral drawing, and several others, indeed, should have been a finishing stroke for this theory. But putting this aside, is it in any way conceivable that such Masonic problems as were involved in the building of a Gothic vault upon Gothic piers, the proper curving and mitring of the moulded voussoirs, and the placing a group of arch mouldings in correct and artistic relation to the pier sections beneath, could have been accomplished without a great deal of careful "setting out" first, by some descriptive medium or other? Are we to suppose, again, that the builders, or "architect" (may we say?), of the Lincoln presbytery, when permission was obtained to break through the city wall in order to carry out the design, had really not laid down first, in some manner, the proportions and dimensions of that splendid piece of work? or that the plan of a large cathedral or conventual establishment could be properly arranged, and the respective buildings proportioned to one another, without some degree of drawing being undertaken first, that at least men might have *some* notion of what they were going to build? We say nothing as to the manner and material of the delineation; the Mediæval architects may not have employed "architectural colourists," at fancy prices, or kept a "rapid perspective hand" in regular employ; but that such buildings came not but by much previous thought and consideration, not to be carried on without some sort of outward symbols and figurations, is contrary to all analogy and common sense. On the other hand, it can hardly be questioned that modern architectural practice takes too much the form of mere drawing-board exercise, and that many details are designed at the office desk, and never afterwards seen by the architect until finally completed and fixed, which would probably have been carried out with much better results had they been invented, and modified when necessary, by the architect at the building, with the position before his eyes, and worked out under his direction, with only so much of rough sketching as would suffice to render his idea intelligible to the workman.

For with regard to all architectural design it should be borne in mind that the drawing is, after all, merely the means of conveying to the craftsman the idea of the architect. This has been so far overlooked, that architectural draughtsmanship has arrived at the importance of a separate calling; we can scarcely call it an art, but rather a handicraft, for it may, with certain limitations, be successfully practised, and even carried to a high degree of elaboration, by persons possessing little education or feeling for architecture as an art. The draughtsmen (and their name is legion) are likely to be rather shocked at any view of the subject whereby this their craft is in danger to be set at nought; nor do we wish unduly to disparage the efforts of a very hard-working and not over-paid body of men, or to say that there is no real value to be

placed on their work. On the contrary, there is something extremely pleasing and satisfactory in the aspect of a well-finished and clear architectural drawing, with its hard firm lines, and carefully-touched conventional shadows, everything subordinated to the main object of showing the architectural detail clearly, but with sparkle and effect. There are certain cases in which it is desirable that this should be well done, as well as possible; in an exhibition of architectural designs, for instance, when the aspect of a number of rough or slovenly drawings would be disagreeable to the eye, as well as an obstacle to the ready study of the various designs; and there is something in the sight of a drawing executed with care merely for its own sake, which is, in a way, pleasant and satisfactory. But in ordinary architectural practice this sort of thing may be, and constantly is, carried too far, both as to the degree of finish bestowed on drawings, and the amount of drawing considered necessary in order to carry out a building. While neatness is always desirable, it may be said that no greater waste of time can be made than in elaborating flourishing titles, scales, &c., to ordinary working drawings. Then with regard to the drawings themselves, an absurd amount of labour is often bestowed, in proportion to what is really necessary. There are offices where it is a regular habit to get up ordinary elevations and details with the most elaborate pen and ink shading, executed painfully with the aid of a ruler; a process which is not only an absurd waste of time, but injuriously fatiguing to all but very strong sight. We have seen such a ridiculous piece of affectation as the production by an architect, on exhibiting the elevations of a building, of a large magnifying lens (such as are often in use in picture galleries), that the spectator might be rendered properly alive to the minuteness of the drawing. Drawings which have to be looked at in this way will commonly be found to be merely drawings, and nothing else; for the time that should be taken up in *designing*, in the proper sense of the word, is here given to merely mechanical work; the means put before the end. Then, again, as to the extent of drawing required for carrying out a building, a great diversity of opinion and practice prevails. Giving too little drawing is certainly a mistake, and perhaps the worse mistake of the two, with regard to plans and practical details; puzzling to the builder and workman, and embarrassing to the quantity-taker, who has to apply to the architect constantly for further and clearer information. Some architects, on the other hand, have made a practice of exhibiting in their several working drawings all the joiners' details, such as skirtings, architraves, stair balusters, &c., on a minute scale,—a double waste of time, as these things, if the architect take them into his hands completely, must be detailed afterwards a larger size; and in every building these parts of the work are liable to all kinds of modifications from unforeseen causes. It is useless, too, to hamper a workman with drawings of practical features that he must be perfectly *au fait* at if he knows his trade at all,—such things as window casings, shutter-boxes, &c. Unless there be any unusual contrivance to be explained, a joiner may be trusted with these, or he is not fit to be trusted with anything, and had better not be employed. Where ornamental details are to be given full size, it is unnecessary labour to show them minutely on the general drawing, especially as such points ought always to receive careful special consideration as the building proceeds; and with regard to ornament, again, it may be observed that, when really clever art-workmen are employed, a sketch giving the architect's general idea will often serve their purpose and his better than a finished drawing which ties the carver down to minute detail, and leaves no room for freedom of treatment and execution on his part. It is with regard, indeed, to the detail of a building that the greatest misuse of architectural drawing is made, as we have already hinted. Where it is possible, the presence of the architect on the spot, and the trial of the effect of ornament *in situ* by rough models or chalk sketches, might often do more to put life into the design, and preserve the best proportions and relation of size in detail, than any amount of detail drawing carefully made up at the desk would accomplish; indeed, in regard to the size of parts, the most experienced eye may often be deceived on paper, and ornament which looked very well in a drawing may turn out, when carved, in its position in the building, to be too large and coarse for refinement, or too small for effect, to a degree not at all suspected previously. Besides this, the effect of sunshine and shadow is sometimes so different from what is conceived as the result when designing the ornament; and especially in the case of a small feature often repeated, some peculiar turn, so to speak, of shadow, may give an effect quite remote from what was imagined and intended. When, owing to distance, frequent visits to a building are impossible, one of the safest ways of studying and working out the details is to draw out an outline of the elevation to a tolerably large scale (½ in., or thereabouts, according to circumstances), sketch the various details full size, then reduce them carefully by scale, and draw them in pencil on the test-elevation; by this means their proportion to each other and to the whole design can be observed and modified where necessary. This method, which is a really intelligent use of architectural drawing, was constantly employed by a late celebrated architect; and though "5 per cent." will not pay for working out a design in this way, the architect may get some return for it in his future reputation.

As to method and manner of getting up architects' drawings, there have been, we need not say, a variety of fashions, sometimes rather absurd. There was the old style of fine outline drawing, in which our fathers excelled; now completely disused, and which had the disadvantage of being so very conventional in manner and effect as to convey, less than any other style, any notion of the real aspect of the proposed building to the eyes of a client. Those were the days, too, when the picturesque of masonry or brickwork was a thing ignored, and elevations were drawn as if they were intended to be hewn out of a single block. With all this there were merits: great decision and fineness of line, and very careful laying down of everything precisely to scale.* We have had a good many other styles since, the opposite extreme being what may be termed the "blotting-paper" style (chiefly indulged in by architects of the type of "John the son of Smith"), where the object is to be as rough and unintelligible as possible. Even where comparative neatness is practised, a habit of absurdly thick lines was introduced some time since, and is still adhered to a good deal; in some plans drawn in this style it is impossible properly to apply measurement by scale, for a wall may be 9 in. or 14 in. according as the inside or outside of the defining "lines" are measured to. A line, according to Euclid, is "length without breadth;" a definition which draughtsmen should remember. Oddly enough, the same school of architects who brought the system of thick and coarse lines into vogue, and even some of the same individuals, have more recently taken up an opposite habit, and are practising remarkably fine and laborious drawing. For practical purposes, the best style of drawing is that which employs strong and decisive, but not thick, lines. A workman or clerk of works likes to *see* a line, and not to have to strain his eyes over hair-like marks; moreover, very fine drawing is unsuitable for plans which have to be knocked about a good deal, and be fingered and pulled about by the "hard hand of labour." The old system of "dark lining," so far as plans are concerned, is now almost entirely abandoned. It only occasioned confusion as to sizes and measurements. Plans should always be figured, at all events in their principal dimensions. It saves a great deal of time in setting out work, and ensures accuracy. If architects who neglect this were to look at the kind of tool which a bricklayers' foreman complacently accepts as "a pair of dividers," and which he applies himself to scale a drawing by, they would not be surprised at little inaccuracies creeping in under this system. In drawings of carpentry, construction, &c., it is a good system to mark on the drawings the scantlings of the various pieces, and any information that can be put on a drawing as to the method of construction and material to be employed. This is a much shorter way than specifying, and has the additional advantage that the workman has only one paper to look at instead of two. Colour is much more employed in showing distinction of material than formerly, especially in plans, and is probably the best and simplest method of doing this; but it should not be over-done, especially in washes put over floors and walls for distinction of stone, brick, tiles, &c., which is sometimes done so coarsely, and in such glaring tints, as to threaten one with ophthalmia, and impair instead of helping the clearness of the drawing. In elevations an indication of the character of the masonry to be employed will never be omitted by a true architect; and a very good and characteristic effect can often be given to a drawing with little trouble, by a slight but well-judged indication of the jointing of the stones; but a feeling for the picturesque of masonry is curiously rare among draughtsmen, who sometimes employ a long time in doing laboriously and ineffectively what a few happy touches would have accomplished in one-fourth the time. In regard to perspective, it is a pity that the system of etching with ink, as recently exhibited, for instance, in various masterly drawings for the Law Courts and other buildings, is not more employed. It is a method of execution peculiarly suited to architectural subjects, while it does not impose on the architect the use of any other materials or instruments than such as he is always in the habit of using: he may thus often save the disproportionate expense which would be incurred for coloured perspective views, the first-class execution of which is almost an art of itself; and the etching, when done with real feeling, is in some respects a better means of representing the building, especially in the fact that the etcher has under his complete command the smallest points and incidents of shadow on the minutest features of his building. The power of "cooking" the aspect of a building is certainly much more limited in etching than in colouring, which may be one reason why it is less employed; but every system which tends to make the architect his own workman rather than the mere employer of the labour of others is so far to be recommended, if on no other grounds. But whether the object of a drawing be the practical information of the contractor, or the enlightenment of a committee, let it be borne in mind that the drawing is, after all, but a means to an end, and that, except in some special cases (as in exhibitions), it is not worth while to waste time over its elaboration, which might be better employed in work of more permanent value. We have spoken of drawings "rough or slovenly," but the two words are by no means convertible terms; and it is quite possible for a drawing to be in one sense roughly executed, and yet to fulfil all its practical objects, and produce a pleasing effect on the eye in addition.

* Of the minute directions sometimes given by the older architects of the Renaissance period in England an instance is furnished by the working drawings for the rebuilding of Lyme Hall, in Cheshire (the seat of the Legh family), about the close of the seventeenth century. The architect's front elevation, which with other drawings is preserved by the family, shows all the joints of the ashlar-work carefully divided out, and the length of each stone figured upon it.

THE TENURE OF LAND.

THE INSTITUTION OF SURVEYORS.

At the opening meeting on the 14th instant, the president, Mr. Richard Hall, made an address, which he mainly devoted to a full exposition of the Irish Land Act. At the close he said,—

"Throughout the Act, the tenant is most carefully protected, and, with the Ulster custom legalised, and his tenancy secured from disturbance, he, in fact, possesses, as it were, a joint interest in the property with his landlord. This cannot fail to exercise a considerable effect on the value of property, in addition to the revolution it must bring about in the relation between landlord and tenant. It is to be feared that the Act will provoke much litigation on the claims of tenants for improvements, which, after the lapse of time it will be difficult for the landlord to disprove, the presumption being in their favour.

Where the Ulster and other customs do not obtain, landlords will be likely to endeavour to avoid tenancies under 50*l.*, in order that they may contract with their tenants to be relieved from the provisions of the measure. The clauses enabling the Government to advance money are very important, and may prove advantageous to the country by affording means for the reclamation of waste land; they will, however, encourage sales to tenants, and it is difficult at present to predict the effect which will be produced by the consequent subdivision of estates.

The consideration of this question almost naturally leads us to that of the relations of landlord and tenant in this country, a subject which would appear to be, at this juncture, pre-eminently worthy of discussion by the members of this Institution.

It is true that the excellent paper by Mr. Squarey, and the discussion that followed, have nearly exhausted that part of the subject relating to the cultivation of the soil; but the important question of the advantages or disadvantages of leases, and the principles to be adopted in dealing with what are termed permanent improvements, still remain to be considered.

A lease, no doubt, secures to the tenant the advantage of being able to lay out his capital and make the most of his farm, with the knowledge that he will have time to repay himself with interest. It, however, sometimes proves a clog even to him, and it hardly affords such a security to the landlord, in the event of his lessee failing to carry out its provisions in their integrity. I am somewhat inclined to prefer the principle of shorter tenancies, provided that the agreement is framed with a due regard to the interests of both landlord and tenant, and includes some system by which the latter may be compensated for outlay, the benefit of which he has not fully reaped. The important axiom laid down by Mr. Huskinson, in his remarks on Mr. Squarey's paper, should, however, be kept in view,—namely, that tangible and visible results only should be paid for. I was not surprised to learn from him that the average farming of Scotland, where leases almost universally prevail, hardly equals that of Lincolnshire, with its tenant-right custom.

The question as to what part, if any, of the outlay for permanent improvements should be incurred by the tenant, is also one which may be considered with advantage. In this term are included those improvements which tend to enhance the productiveness of the land and increase its value permanently, such as the erection of buildings, drainage, water supply and storage, fencing, road-making, and the reclamation of waste.

I am disposed to think that works of this character should fall entirely within the province of the landlord, and that the tenant should pay an extra rent rather than contribute the whole, or any part of their cost. The facilities for borrowing the necessary capital of which the landlord can avail himself, very considerably diminish the difficulties in his way; but we have occasionally to deal with owners who cannot, or will not, perform even works of necessity, and in cases of this kind the tenant must often bear expenses in self-defence.

The comparative advantages of large and small farms, is another branch of this subject which affords important matter for consideration. The practice of throwing farms together, and thus getting rid of small occupations, is increasing; and by diminishing the extent of building necessary for the occupation of the land is of considerable advantage to the landowner. Large holdings, tenanted by men of capital, encourage a high system of cultivation and afford ample scope for the use of steam-power, but have a tendency to lesson the amount of labour employed. This practice, however, would perhaps be of doubtful expediency for the general interest of the community, if small occupations could be maintained in their full productiveness. The difficulty experienced, is to be found in the want of the capital necessary to enable the small occupier to obtain the greatest possible return from the land, and at the same time preserve it in condition. If this and adequate skill were forthcoming, no doubt the general supply of produce would be increased.

ON EARLY WOOD-ENGRAVING IN CONNEXION WITH PLAYING-CARDS.

The recent publication of two very beautiful volumes, "The Arts in the Middle Ages," translated from the French of M. Paul Lacroix, and "The Wonders of Engraving," from the French of M. George Duplessis, has interested me greatly, by the information and observations they contain respecting the arts of typography and xylography, which have recently given rise to a fresh controversy conducted with too much of that acrimony which usually characterizes literary disputations. How strange that where the sole object is, or ought to be, the attainment of truth, the following it by different paths should cause so much irritation and acerbity!

Harking back nearly a hundred years, we find the *literati* of France, Germany, and England intent upon discovering the origin of printing. They settled it somehow or other, or they tired of the pursuit, and left any one who had wind and strength enough to outrun them to settle it himself after his own fancy. But who ever discovered the origin of anything? When he who has been accounted the wisest of men affirmed that there was nothing new under the sun, how is originality to be established? Were the Babylonians, the Egyptians, the Chinese ignorant of the arts of engraving and printing in some form or other? We know not,—may never know,—what they knew, or from whom they learned what they knew. But antiquaries are, generally speaking, no logicians. They ferret out a date or an assertion, and commence a discussion or found a theory upon it, without first ascertaining that the date is correct or the assertion trustworthy. They argue without "settling their premises," and wander away into the wilds of imagination, more like enthusiastic poets than matter-of-fact critical archæologists.

The point at issue, I take it, was and is how and at what precise time printing with movable type by means of a printing-press and with printer's ink was first invented in or introduced to Europe. The astonishment created by the appearance of the first books that issued from the press of Gutenberg and Fust; the narrow escape of the latter from the death of a sorcerer; and the visit of Nicholas Jenson to Mayence, by command of Louis XI. of France, in 1462, to investigate and report on the new method of producing books "without the aid of the pen," and to "carry off surreptitiously the invention, and introduce it into France," are undisputed matters of history. The mysterious law-suit at Strasbourg between the Dritzchen family and Gutenberg, in 1439; the deed of partnership between Gutenberg and Fust, in 1450; and the association of Peter Schœffer, or Scheiffer, in 1452, are, if these dates can at all be depended upon, collateral proofs that typography was for full twelve years struggling into birth, and reached perfection only in the early months of 1456, when the first great Bible was ready for sale, and copies disposed of as MSS. at very high prices. The secret evaporating, Fust and Schœffer, having previously dissolved partnership with Gutenberg, printed the "Psalmorum Codex," the earliest book bearing their names, and which fixed in a manner, for the first time, a date for the new art they had so much improved, the colophon announcing that the book was executed "without the help of the pen by an ingenious process in the year of our Lord 1457."

Such are the most important particulars collected by the latest writers on the subject of printing, and I have stated them in the briefest form, so as not to encumber us with details irrelevant to my purpose, which is simply, without any partizanship or assumption of authority in matters of art, to assist to the best of my ability in the detection of error and the development of truth. It has been the received opinion for nearly a century, that the engraving of playing-cards on wood preceded and suggested the block-books of the fifteenth century, which in their turn led to the invention of movable types. The "brief-malers," or card-painters of Germany, are said not only to have made and sold all sorts of playing-cards, but stamped and illuminated various images of saints; and M. Breitkopf, in his "Treatise on Engraving on Wood," supposes that the impressions of these saints preceded that of the playing-cards; but, at all events, to one or the other, we are told, succeeded subjects of sacred history, accompanied by explanations cut in wood, which was the origin of books printed with blocks of wood, and from this practice Gutenberg obtained his first idea of the typographical art. This very probable theory remained unquestioned till 1868, when the observations of Mr. Henry Holt, on the Fairford windows, at the annual congress of the British Archæological Association, at Cirencester, in illustration of which he produced a copy of the *Nuremberg Chronicle*, and specimens of early wood-engraving, led to his propounding a new hypothesis completely the reverse of the old one. Mr. Holt has asserted that printing with movable type preceded engraving on wood; that the block-books were cheap substitutes for the highly-priced productions of the printing-press; and boldly challenged the literary world to prove the existence of any block-book or wood-engraving in a national or private library previously to the middle of the fifteenth century.

After a careful inspection of the celebrated St. Christopher, in Earl Spencer's library at Althorp, he contends that the date 1423 is not that of the engraving, but of the legend beneath it, which had been copied by the engraver, and has reference to the jubilee year of the saint. That it has been printed by a press, and with printer's ink, and, what is more important, upon paper which exhibits the well-known water-mark of the bull or heifer's head, with a flower issuant between the horns, which was used by Fust, and supposed to have been made for him. He has shown that the discovery of this supposed early engraving instigated the fabrication of several similar, which were stained with coffee, to give them the appearance of age; and more recently some have been found with still earlier dates, 1416 and 1406, the authenticity of which he is prepared to dispute as stubbornly as he has that of the celebrated St. Christopher. All this has naturally aroused a host of antagonists, who have more or less courteously contradicted without convincing him by the production of any incontrovertible fact which would refute the evidence he adduces in support of his arguments. Alone and undismayed, he still gallantly defies all comers. Hitherto it has been a war of opinion only. Mr. Holt has given his reasons for the faith that is in him, and puts the onus of proof very cleverly upon the shoulders of his opponents. "There can be no dispute about the period when Gutenberg produced his Bible. What is required, then, is positive evidence of a wood-engraving or block-book of a date prior, let us say, to 1450. There are grave doubts at least, it must be admitted, about the long-vaunted St. Christopher, and there is nothing but the date attached to the legend to set against the suspicious features of it. There is nothing in the dress of the personage represented to assist the argument on one side or the other. It is simply conventional as regards the holy personages, and the two small figures of peasants present us with no article of clothing peculiar to any time previous to 1423. Even if they did, it would only mark the date of the original design, and not that of its execution on the wood; for there can be no doubt many of the sacred subjects cut by the formschneiders of the fifteenth century were copied from miniatures in the older illuminated MSS. fresco paintings on the walls of churches or other available sources. But how about the playing-cards? Did they originate the engravings of saints and the block-books, according to the old theory, or did they succeed them, as Breitkopf suggests, but yet precede the invention of typography? Upon this point alone I beg, in all humility, to offer a few remarks, strictly confining them to the subject of costume, a test which I have never known applied in vain when called to the assistance of the critical inquirer.

The mention by M. Menestrier of an entry in a book of accounts, of the time of Charles VI. of France, of a payment to a certain painter, named Jacquemin-Gringonneur, of fifty-six sols of Paris for three *jeux de cartes*, gilt and coloured, of various devices, to be delivered to the king for his amusement, gave rise to the belief that cards were invented at that period (1392), for the especial advantage of his melancholy majesty. The chronicle of Petit Jean de Saintre was subsequently cited to show that cards were known in the reign of Charles V., to whom Jean was a page; but Mr. Gough, in his paper on playing-cards, communicated to the Society of Antiquaries (*Archæologia*, vol. viii.), observes that the work itself is, at least, a hundred years later than the date of the presumed allusion, as Jean's epitaph in it is dated 1458, and, at all events, the mention of cards in a work of the latter half of the fifteenth century does not prove their existence in the fourteenth. A still earlier instance was adduced by a foreign antiquary, who quoted the statutes of the order of the Band, instituted by Alphonso XI., king of Castile, A.D. 1332; but Mr. Gough demolished this evidence as ruthlessly as he did the former, by showing that no mention of cards occurs in the original statutes, or any copies of them written or printed previously to the edition of Dr. Guterry's translation of them, published in 1558, at which time cards had become common throughout Europe.

It is unnecessary for me to enumerate all the confident assertions and the equally confident contradictions that are to be found in essays on this subject, from Dr. Stukely to the Rev. E. Taylor, from MM. Sainte Foix and Bellot to MM. Paul Lacroix and Duplessis. There is plenty of evidence to prove that cards drawn, painted, and gilded by the hand, like those of Jacquemin-Gringonneur, and to which the name has been given of "Tarot cards," found their way into Europe from the East in the fourteenth century, or perhaps earlier; but they had nothing

whatever in common with those to which we are accustomed, although they might have suggested them, and the fact in nowise affects the present question, which is one of printing by means of wood blocks only. The seventeen preserved in the Bibliothèque at Paris, supposed to be a portion of those painted by Gringonneur are now allowed to be of a much later date, but are very valuable, as they enable us to distinguish the Tarot cards from the playing-cards that succeeded them. There are no pips nor suits in them; no king, queen, or knave, as in the later packs. The subjects are emblematical, mythological, and scriptural; *cartes de fantaisie*, as M. Leber describes them. There are personifications of Justice, with her sword and scales; Cupids shooting at lovers; astronomers gazing at the moon; death on the pale horse; a pope, an emperor, knights, squires, fools, and the Day of Judgment!

That some game might be played with them is very probable. That they were used for fortune-telling, as our modern cards are, I have no doubt, and hence, probably, their prohibition in various countries; but, I repeat, however curious in themselves, they have no bearing on the point in dispute. Amongst the many official documents quoted to prove the earlier existence of *printed* playing-cards, one only calls for attention. It is a prohibitory order said to have been obtained by the master card-makers of Venice, in 1441, to prevent the importation of the large quantities of painted and *printed* cards, which were introduced into the city to the great detriment of their art. Before any argument is based upon this statement, we ought to be satisfied that the date given is strictly correct, and that verification can only be arrived at by a minute inspection of the original order in manuscript. But admitting for the moment that it is so. The word which has been translated "printed" is "stampide" ("*Carte e figure depinte e stampide*"), and the question arises as to the meaning of that word in 1441. "Stampere," according to Florio, signifies "to print, to presse, to stampe, to *form*, to *figure*," and "stampe," in like manner, besides a print or impression, is said to be "a *marke*, a *shape*, a *figure*." The word existed before printing in its modern sense had been heard of, and the natural application of it to the new art does not in the least determine the question of when that art was invented. Stampide, in 1441, might simply mean formed, figured, or shaped by the means of the stencil, a process which, we know, was adopted at that period, and which, being much more rapid than drawing and colouring entirely by hand, would doubtlessly affect very seriously the art of the card-illuminator similarly as photography at the present day has the art of the miniature-painter. For instance, we have seen that Gringonneur was paid for the cards drawn and painted for Charles VI. in 1302, fifty-six sous of Paris, which is calculated to be about 7*l.* 1*s.* 8*d.* of our present money, and a single pack of *tarots*, admirably painted about 1415, by Marziano, secretary to the Duke of Milan, cost the enormous sum of 1,500 golden crowns (about 625*l.*); but in 1454 (twenty-nine years later) a pack of cards intended for the Dauphin of France cost only five sous of Tours, about 11*s.* or 12*s.* M. Lacroix, to whom we are indebted for the collection of this information, observes, "In the interval between 1392 and 1454 means had been discovered of making playing-cards at a cheap rate, and of converting them into an object of trade;" but he does not seem to have noticed how these facts militate against the hypothesis he propounds only a few lines previously, where, speaking of a pack of cards which he refers to the reign of Charles VII. of France, he says, "They were probably executed between 1420 and 1440, that is to say, *prior to most of the known xylographic productions*. Playing-cards therefore served as a kind of introduction or prelude to printing from engraved blocks, an invention which *considerably preceded* the printing from movable characters" (page 137). Now as typography was undoubtedly invented before 1456, the date of the publication of the Mayence Bible, if printing from wooden blocks "considerably preceded" that art, and was itself suggested by the engraving and printing of playing-cards, which "served as a kind of introduction and prelude" (the old theory, in fact), we must certainly go back to very nearly the beginning of the fifteenth century for the first appearance of printed playing-cards, and give some credence to the story of Adrian Junius,—half believed by M. Lacroix himself—that both typography and xylography had been practised at Haarlem by Lawrence Coster as early as 1422. Let us see, therefore, if we can find any undoubtedly of that date. The same writer has just told us, only three lines higher on the same page, that "These cards, which bore all the characteristics of the reign of Charles VII., must be looked upon as *the first attempt* at wood-engraving and at printing by means of engraved blocks." From the costume which he describes (for unfortunately he has not given us an illustration of them), and the inspection of some engraved for Mr. Taylor, which may be the same, I should be willing to admit that they may be of the time of Charles VII., but certainly not earlier than the appearance of typography in 1456. Charles came to the throne in 1422 and died in 1461, and "the plumed flat cap" and other peculiarities, point clearly to the end, and not the beginning, of his reign; and if these are really to be considered "the first attempts at wood engraving," and a prelude to printing from wooden blocks, what becomes of the boasted discovery of M. Delaborde, of two prints dated 1406, or the story of Adrian Junius above mentioned? These cards, however, of which there are two packs, though still partaking of the *tarot* character in design, are the earliest specimens extant of the transition into the playing-cards of the following century. They present us with king, queen, and knave, and one of them with the well-known four suits, clubs, hearts, diamonds, and spades, the other displaying crescents instead of diamonds. The only engraved *tarot* cards at present known of, are Italian, invented, according to M. Lacroix, about 1460, and I should assign those of the time of Charles VII. to close upon that date. I have, in short, met with none that could safely be accounted earlier, judging by what I consider the infallible test of costume and armour, in conjunction with which must not be forgotten remarkable fashions of hair and beard. During the first half of the fifteenth century the hair was worn short and the face was closely shaven at the sides by all men, some retaining a moustache, with or without a forked beard; but the generality shaved entirely. After that date the hair gradually lengthened, and in the latter portion of it, from the reign of Louis XI. in France, and Edward IV. in England, covered the ears and finally fell upon the shoulders, the doublets being worn as low in the neck almost as the dress of the women. Where there may be some doubt about the costume these marks will frequently decide the question. Mr. Chatto (page 214) observes that "Conclusions drawn from the costume displayed on cards are not of much weight in the determination of a date, seeing that persons supposed to be well acquainted with the subject of costume have not been able to determine the date of any old drawing, even within fifty years;" and Mr. Taylor agrees with him that such speculations as regards dates "are very often fallacious, as any type, once become conventional, might continue in circulation for a considerable period, and this, too, in different countries" (page 115). To these remarks I answer that persons who could not determine on the date of a costume within fifty years would never have been supposed by me to be well acquainted with the subject; and that, though I quite agree with Mr. Taylor as to the perpetuation of an ancient type, I am surprised that he does not appear to see how that fact assists the new theory; as, supposing an engraving can be found displaying a costume undeniably of the fourteenth or even thirteenth century, the stickler for a later date would be justified in denouncing it as a copy of an older type, as in our present court cards we still find king, queen, and knave represented in the costume of Henry VII.; and it so happens that I can instance a case exactly in point. Amongst the many beautiful illustrations of his valuable volume, M. Lacroix has given copies of some engraved cards, one of which represents "a knight" in the civil costume of the close of the fourteenth century, the edges of his garments being curiously cut into the shape of leaves,—a fashion commented on by the chroniclers, and prohibited by sumptuary laws to persons of inferior degree. And yet it is acknowledged to be one of a set engraved by an artist only known as "the Master of 1466," and was, no doubt, copied by him from a "tarot" pack drawn and painted in the reign of Charles VI., very nearly a hundred years earlier. At the same time, it must be obvious that, though I might, if the card had not been engraved, have referred it to the period when so peculiar a fashion of dress prevailed, I should never have assigned it to a time when that fashion had not been invented. It consequently follows that cards presenting us with the costume of the latter half of the fifteenth century, although they might have been engraved much later, could not, by any possibility, have been manufactured earlier. With the exception of those by the Master of 1466, and a set of tarots called the Mantegna Cards, on one of which is the date 1483, all the specimens of printed playing-cards that I have met with display the unmistakable character of the fashions of Germany, France, and England during the latter half of the fifteenth century, and the greater portion those of the very latest part,—Louis XI., Charles VIII., of France; Edward IV. and Henry VII., of England; and Maximilian I., Emperor of Germany. The curious cards formerly in the possession of my old and kind friend, Mr. Francis Douce, some of which have been engraved by Mr. Ottley and Mr. Strut, are believed to have been the work of the famous Martin Schön, or Schonganer, who died in 1486, and his contemporary, Israel van Mechelm. The earliest representations of persons playing at cards that has yet been discovered is a miniature in a MS. French copy of St. Augustine's "Civitas Dei." It was engraved for Mr. Thos. Wright's "History of Domestic Manners and Sentiments," p. 223, and exhibits two ladies, with the steeple head-dresses of 1467, and a gentleman, with the small cap and long hair of the same period, playing at a round table, with cards, of which the pips are visible. The illustration on the opposite page, copied from a miniature in "the Roman du Roi Meliadus," British Museum, Add. 12,228, and stated to be of the fourteenth century, is of no authority, the original drawing not being contemporary with the MSS. (in which there is no mention of, or allusion to, cards), and one of the latest and worst of those drawn and left unfinished by very inferior artists. The pips discernible in the cards sufficiently indicate a date about coeval with the other "card-party," anterior to which I have as yet been unable to discover any printed playing-card.

I offer no opinion of my own; I simply state the result of such examinations as I have had time and opportunity to make of the statements, arguments, and evidence of others better qualified than myself to discuss the subject. It is one of so much importance, affecting, as it does, the history of art, that I believe it worthy of a calmer and more careful reconsideration than it has yet received. Mr. Holt may be mistaken,—his enthusiastic nature may have caused him to jump to conclusions too hastily; but ill-concealed contempt for his judgment, or violent denials of his assertions, are as idle as they are unworthy. Truth is great, and will prevail, and I would not do Mr. Holt so much injustice as to believe that he would not feel obliged to any one who could establish the fact, whether it was for him or against him.

J. R. Planché.

GLASTONBURY.

Take a sheet of note-paper; draw down through the middle of it a line—you need not be so very particular about its being straight; one-third the distance from the bottom draw a line at about right angles, one-third the length of the first line; call the point of intersection the Market Cross, and call the line Magdalene-street; from the Market Cross to the bottom of the paper call the line Benedict-street; from the Market Cross on the *other* side of the first line draw another line, at about right angles, and call that North Load, a rather singular name, but never mind—"what's in a name?" Nearly at the top of the paper draw another line, at about right angles, and call that Chilkwell-street; and from that draw a line so as to intercept Magdalene-street, and call that Bere-lane; prolong the line, and call that Weary-all Hill; come back to the first line, where you commenced drawing Chilkwell-street, and draw a short line to the left: call that the Wells-road. Consider that Magdalene-street is, near the Market Cross, from 100 ft. to 200 ft. wide; Benedict-street (which is the road to the railway station) a dirty little lane, of 16 ft. or 17 ft.; High-street a well-favoured street, with good pavements on each side, and of a width from house to house of about 50 ft.; North Load the same width as St. Benedict-street, but still dirtier; Chilkwell-street, the Wells-road, Bere-lane, and Weary-all Hill of a width of perhaps from 20 ft. to 30 ft. Turn the paper so that the Market Cross may be north, and Magdalene-street south; give a gentle

inclination to the paper westwards; turn up the paper above Chilkwell-street, and consider that a hill; and consider Weary-all Hill a conical lump of dirt;—and you have a rough idea of Glastonbury, or Glastenbury, a town of 3,500 inhabitants, and filling an area of about 7,100 acres, in the county of Somerset.

Four or five years ago, this town had an awful visitation of cholera; in a short time there were seventeen or eighteen deaths. Last July some sporadic cases of scarlatina appeared; in August it became an epidemic, and in fifty days there were fifty deaths, about forty of which were from scarlatina. It was confined to a street or two at first; at last it spread all over the place like seed coming from a thistle-top. How came such anguish,—the anguish of death,—upon so many in such a terribly short time? How came such trouble on the town? It is well situated, it is warm, has a fair supply of water, and its streets, if dirty, are on the whole above the average width. If a farmer had a field well situated, and he allowed its crops to be stifled and destroyed for want of drainage; and he allowed dirty corners in his field, full of thistles, that would blow about, and scatter their seed in every direction, would be be considered a good farmer? No. Then it is just that at Glastonbury: the people are destroyed like badly-managed crops, simply for want of good farming. First as to sewers. The only street in Glastonbury that can be considered properly sewered is High-street; the other streets have all sorts and sizes of drains to depend on; they run here and there, lose themselves, and get choked, how, where, when, no one seems to know; yet no town could be drained much more easily or more effectually. Let the streets be drained on a system, with pipes, and conduct the sewage, which could be easily done by means of gravitation, not into open ditches, and a horrible cesspool, but upon land, and use it for irrigation. There would soon be a generous return in health, in comfort, ay, and even in money, if the irrigation were managed properly; and towards that end we recommend the authorities to study, for it is well worth study, "Practical Suggestions, by Robert Rawlinson, C.B, in reference to Sewerage, Drainage, and Water Supply of Lunatic Asylums issued by the Commissioners in Lunacy."

The greater part of the sewage now empties itself in open ditches in Paradise Fields! (fine ironical talents the owners must have had to give the place such a name!), and it finds its way to a cesspool not far from the railway station.

The cesspool, or reservoir of poison, is more than a quarter of a mile from the Market Cross, yet we were told the smell from it and from the ditches could be easily discovered in the town, when the wind was in a westerly direction—and westerly winds are the prevailing winds at Glastonbury.

The houses of the poorer inhabitants are characterised by a want of back premises; it is no uncommon thing for the *garde-robe* to be under the same roof as the dwelling. In the pit are stored all garbage and refuse until it is full; then, and not until then, it is cleared out. We saw a pit being cleared out in Chilkwell-street; it was immediately outside the back door, and against the wall of the dwelling-house (there *was* a back door in this case). The pit would hold about three loads of stuff, and the smell, the appearance of the stuff, and the appearance of the pit were horrible. Fancy this horrid pit being gradually filled up, matter added to decomposing matter, to decompose day after day, week after week; and we presume this is not an unusual instance. Is it any wonder that Nature rebels so fiercely, and sends sickness, with its accompaniments of wretchedness and woe? Then washing-water is flung into the gutters outside these houses, making the town look still more dirty, and adding to the offensive smell. Take two or three of these houses, fill them as full as they can be of human beings, and put them all upon a short allowance of water, and you have the worst thistle-bed in Glastonbury.

If they were determined to have disease in Glastonbury, no matter at what price, they could not do much more towards effecting their determination, if they suffer such places to exist. The water-supply does not seem perfect; but that we will not now enter upon, for we have pointed out in all kindness the chief sources of the presence of zymotic disease in Glastonbury. We hope what we have said will be taken in the kindly spirit in which it is offered. PEO.

WORDS ON THE DRAINAGE OF LIVERPOOL.

THERE are many people who unquestionably believe that the converse of every proposition has equal claims to truth with the original. They place implicit reliance in the *vice versâ* statement, and consider it to be applicable in every instance, and a rule without a single exception. It is not to be wondered at therefore, having regard to the extensive scope of this mistaken credulity, that we continually witness practical illustrations of the false motto, "Never do to-day what you can put off till to-morrow." There is a fatal charm in procrastination, an enticement in delay, and a soothing pleasure in indecision, from which the wisest of us are in no ways exempt. Nine men out of ten experience the greatest difficulty in "making up their mind," and it is unnecessary to enlarge upon the enhancement of the difficulty, when it is kept in view that nine men out of ten must "make up their mind" before any measure involving any public or national benefits can be conferred upon the community at large. Our local boards and corporate authorities are, in general, exceedingly prone to yield to this mischievous species of fascination. They find it impossible to decide, not in a hasty, but in an expeditious, manner upon any proposal which is brought under their consideration. They display an amount of ability in disputing upon quibbles which would confound a Lord Chancellor; they require evidence sufficiently tangible and positive to convince an idiot, and, under the guise of asking questions, they propound riddles and conundrums that would puzzle the Sphinx herself. Instead of foreseeing that sooner or later compulsion will succeed to option, and necessity supersede expediency, they continue to let matters take their course, and refuse with a persistency that is invincible, to what our French neighbours call, "accept the situation." Thus it is that sanitary and other measures of the greatest importance are postponed from time to time, only to become eventually the more onerous and the more imperative. Adjournment follows adjournment until the process partakes of the nature of a *sine die* arrangement, and those who ought in the interests of their own welfare and that of others to be readily influenced by the *suaviter in modo*, can only be brought to a sense of their duty by a vigorous administration of the *fortiter in re*. There is no other reason to which can be assigned the fact, that so very few of our towns have adopted proper systems of drainage and sewerage,—systems which science, morality, and hygiene have long since demonstrated in the clearest manner, to be an indispensable feature of civilisation. Our towns, both large and small, with a few solitary exceptions, adhere to the old routine, and continue, as the population increases, to pollute with commensurate augmentation the earth, the air, and the water.

The practice of discharging the whole contents of the drains and sewers into the nearest river or stream is so prevalent, that innumerable instances might be adduced where it now exists, and has existed from time immemorial. Among cities of considerable size and national importance, in which this practice still continues, Liverpool may be quoted. The Mersey, which bears upon its waters the merchandise of the world, is the common sewer of the city. All the main drainage running from the western side discharge their contents into the river, either directly or indirectly. There is no doubt but that a stream of the volume and capacity of the Mersey, to use a common phrase, can "stand" an amount of pollution that would reduce one of smaller dimensions to the same state that the Irwell is in. But there are limits to the quantity of poison that rivers, as well as human beings, can take with impunity. The experience acquired from the management of the London sewage, and its effect upon the Thames, have taught us thus much. Similarly to the metropolis, the suburban part of Liverpool, especially the rising borough of Bootle, is increasing rapidly in population, and its drainage and sewerage becomes a formidable addition to that of the parent city. Independently of the fact that before long legislation will step in and forbid, under any circumstances the discharge of sewage or refuse-matter into rivers, the cause we have just alluded to, would of itself suffice to render it necessary to provide for the disposal of the sewage otherwise than by allowing it to flow into the Mersey. It must not be forgotten that nuisances exist quite as much, if not more, in degree than in kind, and that extreme dilution will nullify the effects of the deadliest poisons. Assuming, therefore, as may be reasonably done, that it is a mere question of time, whatever may be the actual cause, regarding the present disposal of the Liverpool drainage and sewerage, the question that presents itself is, what means are to be adopted to ensure another outlet for it when the present one is permanently closed? One result will be, that in future, instead of so valuable a commodity being wasted, it will be utilised in some manner or other. Whether it will be utilised to its maximum or not depends upon the system adopted; but any scheme of utilisation, no matter how crude and imperfect, is preferable to the suicidal policy of discharging so rich a manure into unproductive waters. That we ought to utilise our sewage—that is, get so much manurial value out of it—is as recognised a maxim among professional and scientific men, as that we should get so much work out of a horse, or so much steam out of coal. If the Liverpool authorities determine upon irrigation as their principle of utilisation, they must, in the first instance, provide for that indispensable adjunct to this method—so much land. It is not necessary that the whole of the land to be acquired should be in one and the same locality. On the contrary, it would be better to have several sewage farms, so that the drainage of the different districts might be accommodated separately. This is particularly desirable in a city similar to Liverpool, in which there is a high level and a low level system of drains; for some of the land could thus be supplied with sewage on the principle of gravitation, while the remaining less accessible portions could be appropriated to the utilisation of the sewage that it might be necessary to raise by pumping.

It may lift all, or nearly all, its sewage into one main sewer, and discharge it over a large tract of sandy ground, or it may deal with it separately, as may prove best upon a mature consideration of the whole question, which will undoubtedly, before long, have to be grappled with in a considerably more extensive and energetic manner than the authorities have yet displayed. Some attempt has been made to utilise the sewage of Liverpool on a farm of about forty-five acres; but the results have not been satisfactory, and do not bear out those which have been obtained elsewhere. This is not to be wondered at, when the difference of conditions attending the case is taken into account. So long as the drainage and sewage of Liverpool is permitted to flow into the river, so long will that ready and cheap outlet be made available for the purpose. Any trifling irrigation that may be carried on in the meantime can only be looked at in the light of an experiment, and, moreover, an experiment not particularly well carried out. But once let a veto be put upon the present system, let the great Mersey drain be closed, and we shall witness a very different state of affairs. The authorities will be then compelled to regard the matter *au sérieux*, and after the usual amount of delay, indecision, and negotiation, will set vigorously to work to solve the question on a more extensive scale than has been yet attempted.

RESTORATION OF WINDSOR PARISH CHURCH.

THIS work has been completed, and the church opened. What is done is only a portion of an extended scheme involving an estimated expenditure of 8,000*l*. The portion of the work now carried out consists only of the erection of the chancel, organ-chamber, and Royal pew, the re-seating of the floor of the church, the removal of the organ, the alterations of the windows, and the reconstruction of the western gallery. The addition to the east end of the church is in the Perpendicular style, and is built of stone from Wycombe, with Bath stone dressings, the interior facings being of Corsham stone, with blue Corsham and red Mansfield bands. The east end of the chancel has five sides, in each of which there is a two-light window, one of the windows being filled in with stained glass, presented by the vicar as a memorial to the late Mrs. Ellison. The subject represented is that of visiting the sick. The window is by Heaton, Butler, & Bayne. The reredos takes up the whole of the five sides, one side behind the communion-table being filled in with mosaics by Salviati. The panels of the reredos are separated by twisted columns at each angle, the capitals being carved and surmounted with angels in the posture of adoration. The Royal pew is situated on the south side of the chancel, and opens by arches into it, and also into the

south aisle. It is lighted by two two-light windows, and one circular window over them. There is an entrance to the Royal pew and the chancel from the back of the church.

The chancel opens into the nave by a moulded four-centered arch, 22 ft. wide, 18 ft. to the springing points, and 11 ft. to the crown. Over the organ and royal pew arches there are three clearatory windows. The roof is open, of Dantzic fir, and rests upon crockets, on which are carved angels with musical instruments. The floor of the church has been entirely re-seated. The pews have been abolished, and low open seats of deal, stained and varnished, substituted. In the ends are carved panels of quatrefoil tracery. The church is lighted by a series of coronæ, suspended from the roof in the centre of the arcade arches, by smaller lights under the galleries, and by a larger corona in the chancel. The lighting has been performed by Messrs. Hart, Son, Peard, & Co., London. The decorations are by Messrs. Heaton & Co., London. The heating of the church by hot-water apparatus was entrusted to Messrs. Wellman, of Windsor.

The organ, which formerly stood in the western gallery, is now placed in the chamber on the north side of the chancel.

The contract for these works was taken by Mr. Kelly, for 4,168*l.*; but, from a statement made by the vicar, the estimated expenditure, exclusive of printing and advertising, amounts to 5,814*l.* The designs upon which the work was carried out were by Mr. S. S. Teulon, architect; and they have been superintended, on the part of the architect, by Mr. T. A. Cressy, as clerk of the works.

At the luncheon which took place after the opening, Mr. John Walter, M.P., in the course of an interesting address, complimented the architect on what had been done.

THE COFFERDAMS FOR THE THAMES EMBANKMENT.

INSTITUTION OF CIVIL ENGINEERS.

At the first meeting of the session, November 8th, Mr. C. B. Vignoles, president, in the chair, the paper read and discussed was, "Description of the Cofferdams used in the execution of No. 2 Contract of the Thames Embankment," by Mr. Thomas Dawson Ridley.

The contract upon which these cofferdams were used was let by the Metropolitan Board of Works, in January, 1864, to Mr. A. W. Ritson. It extended from the landing-pier at Waterloo Bridge to the eastern end of the Temple-gardens, a length of 1,970 feet. Mr. J. W. Bazalgette was the engineer-in-chief, and Mr. Edmund Cooper was the resident engineer; the author having charge of the works for the contractor. The breadth reclaimed from the river by this portion of the Embankment varied from 110 ft. to 270 ft.; the depth of water, when the tide was low, in front of the wall, averaged 2 ft., and the rise of tide was 18 ft. 6 in. The borings showed the bed of the river to consist of sand and gravel, resting upon the London clay, at depths varying from 21·58 ft. to 27·10 ft. under low-water mark, whilst the foundation of the wall was in all cases designed to be carried down to a depth of 14 ft. under low-water mark.

It devolved upon the contractor to design dams to the satisfaction of the engineer, who reserved to himself the power to adopt either caissons or cofferdams. The author considered that dams of timber and puddle would not only be cheaper, but could also be more expeditiously constructed, than iron caissons; and having succeeded in obtaining the engineer's sanction to one of the plans which he submitted, the work was begun.

The Temple Pier was the most important work in the contract, and it was therefore requisite to lay its foundation dry as soon as possible. To effect this, two short dams, one at each end of the pier, completely enclosing a short length of the river wall, were first begun. No. 1 was 111 ft. 6 in. long by 25 ft. broad, inside measure, and No. 2 was of similar breadth, but a few feet longer. These dams consisted of two rows of piles of whole timbers, averaging 13 in. square, with a clear space of 6 ft. for puddle. The piles were from 40 ft. to 48 ft. in length, having cast-iron shoes 70 lb. in weight, and were driven 4 ft. into the clay. Cast iron was used in preference to wrought iron for the shoes, as giving, at an equal cost, a much larger base for the timber to rest upon. Where the driving was difficult, shoes having cast-iron bases and wrought-iron straps were employed. The piles were secured by three rows of walings of whole timbers, 13 in. to 14 in. square, through which, and passing through the puddle space, at distances of 6 ft. 6 in. horizontally, were bolts 2½ in. in diameter in the lower waling and 2 in. in diameter in the middle and upper walings. Cast-iron washers, 9 in. in diameter and 2¾ in. thick, were used to distribute the pressure over a large surface of the walings. To avoid the difficulty of having to procure a number of long timbers, the piles were in a few cases only of the full length required, and the others, after being driven, had lengthening pieces fixed to them, so as to raise the dam to a height of 4 ft. above the high-water line. Before proceeding with the construction of these two dams the ground was not dredged, but in all the dams subsequently constructed, the sand and gravel were cleared off to the level of the clay before the piles were driven. Where the ground had not been dredged, great difficulty was experienced in driving the piles, and in the two dams in question one-sixth of the whole number pitched, having shown symptoms of failure, were drawn. In all cases the piles so drawn were observed to have cast their shoes, and their lower extremities were usually bruised into a mass of tangled shreds. The failure generally occurred when the piles were passing through a bed of compact sand, resting upon coarse open gravel. Beneath the gravel, and resting upon the clay, was a layer of septaria, which offered a serious impediment to the passage of the piles; but when once the clay was reached, the driving was comparatively easy. The space between the piles was dredged to the level of the clay, and filled with well-tempered puddle. The transverse struts, of which there was a tier to each waling, were of whole timbers, 8 ft. apart in the length of the dam.

Simultaneously with the construction of these dams, the filling-in of the space behind the Temple Pier was going on, the line of the dam was being dredged, and the driving of the piles begun. The Temple Pier, 470 ft. in length, was irregular in outline, projecting in some parts upwards of 30 ft. in advance of the river wall, and the breadth across the foundation trench in the centre part was 57 ft. To avoid the necessity of having to use a large number of struts of such great length, this dam was strengthened by means of buttresses of piles, somewhat similar to those used in the cofferdams constructed for the Grimsby Docks. (*Vide* Min. of Proc. Inst. C.E., vol. ix., p. 1.) These buttresses were placed at intervals of 20 ft., and were backed up by struts extending across the foundation of the pier. The scantlings of the timbers and the sizes of the bolts in this dam were similar to those in dams Nos. 1 and 2, the walings only being a little stouter, averaging 14 in. square.

In cofferdams there was usually a frequent settlement of the puddle, producing channels underneath the bolts and a consequent leakage. In such cases holes were bored, with a 3-in. auger, through the inner row of piles, immediately below the tie-bolts, and pellets of clay were driven through these into the puddle until the leakage was subdued.

The quantities of material used in the dams were:—In the Temple Pier dam, timber 152 cubic feet, iron 285 lb., and puddle 9 cubic yards per lineal foot of dam. In the other dams, timber 117 cubic feet, iron 202 lb., and puddle 9 cubic yards per lineal foot of dam. The staging from which the dredging was executed, and the piles driven, consumed 19·6 cubic feet of timber, and 13 lb. of iron per lineal foot. Sissons' and White's steam pile-drivers, and those of Appleby Brothers, were used in addition to others wrought by manual labour. The cost of driving was a little under 4d. per foot of the pile when the ground was dredged, but was much higher where the ground was not dredged. The preparation of the piles cost seven-eighths of a penny, and the fixing of the walings and shoring 4½d. per cubic foot, exclusive of the cost of fixing the tie-bolts.

In estimating the pressure to be resisted, and the requisite strength of the dam, the depth of water was taken at 22 ft., the piles were assumed to be 12 in. square, and the struts 13 in. square. The weight of a cubic foot of the dam was estimated to be 100 lb., and the breaking strain of the timber, measured by a load upon the middle of a bar 1 ft. long and 1 in. square, was taken at 400 lb. The pressure of the water was found to be 15,125 lb., or 6·752 tons per lineal foot of dam. The momentum of the water tending to overthrow the dam was 110,916, whilst the momentum of the dam itself was 83,200. It also appeared that if the dam had been 9·23 ft. instead of 8 ft. in thickness, it would, considered as a wall, have been, in relation to the pressure of the water, in a condition of equilibrium. The resistance of the piles to fracture at the ground line was calculated to be 47,127 lb. in relation to a force acting at the centre of pressure of the water. If one-third were taken as a safe load, the result was 15,709 lb. to resist a pressure as before stated of 15,125 lb. Disregarding these resistances, and reckoning the whole pressure of one bay to act upon each strut, the thrusts were—on the lower strut 222·82 tons, on the middle strut 77·5 tons, and on the upper strut 47·94 tons. But with every strut resisting an equal pressure the load on each would be 26·14 tons. For the pressure of the puddle on the tie-bolts, the author had no satisfactory data, but he assumed it to be less than that of a similar section of water, and approximately the load upon the tie-bolts was calculated to be, at all events, less than the following amounts:—On each lower bolt, 2½ in. in diameter, 85,250 lb.; on each middle bolt, 2 in. in diameter, 54,375 lb.; and on each upper bolt, 2 in. in diameter, 37,625 lb.

The total cost of the removal of the dams was 1*l.* 4*s.* per lineal foot, made up thus:—Clearing out puddle, 13*s.* 6*d.*; dredging outside of dam, 7*s.* 6*d.*; cutting off piles, 3*s.* per lineal foot.

THE STATE OF OLD ST. PANCRAS CHURCHYARD.

The condition at the present moment of interesting Old St. Pancras graveyard is a disgrace to those who have control there. Herein are buried some of the oldest, noblest, and distinguished families of the three kingdoms, and mingling with them are remarkable and noteworthy foreigners or exiles from almost every European state. Common respect for the dead, if not archæological interest, ought to be apparent instead of absent, and whoever is to blame for this state of things, whether it be an individual or a local community, there ought to be no qualms in stating the facts above board. On the first occasion when we visited this graveyard, we noticed desecration, demolition, and neglect, and we deplored that it should be so. During these last few days we have again visited St. Pancras, and we were horror-struck at the wanton havoc, the triplefold, increased desecration evidenced. The shock of an earthquake, had it passed over this graveyard, could hardly have produced such wreck and ruin as may be witnessed by any person who chooses to visit and confirm our statements, for deny them none can. Since our previous visit, a period of a few months, several monuments have been smashed and tumbled down, and the iron railings surrounding others have been wrenched from their bases and carried away bodily. In fact, a system of constant plunder is going on in this graveyard, which receives not the slightest care, and has not the semblance of a walk except what leads to one or other door of the church. From some inquiries which we made in the precincts of the church, we heard that the disgraceful state of the graveyard was causing indignation and disgust in the neighbourhood, and an agitation is mooted for a local subscription to put the place in some decent state of repair, if it can be proved that there are no available funds for the purpose attached to the church living.

We allude to this painful subject in a rather forcible manner now, from the fact that we have on more than one occasion heretofore hesitated, in the hope that as what seemed the worst was reached matters would mend. Matters, however, that had gone on from bad to worse for some years (and more noticably since the Midland Railway crossed the churchyard) have now proceeded from worse to——: well, we are at a loss for a superlative to express it. We may simply say that though the dead in Old St. Pancras received a Christian burial at the period of their interment, their remains are now subjected to worse than barbarian treatment.

British Archæological Association.—The opening meeting is announced to take place at the Society's Rooms, 32, Sackville-street, on Wednesday, the 23rd inst., at eight o'clock, when Mr. Dillon Croker, F.S.A., will read a paper "On the Legends of the Wye." This was one of the papers prepared for the Hereford Congress, and postponed for want of time.

COUNCIL CHAMBER IN TOWN-HALL, DETTELBACH, BAVARIA.

COUNCIL CHAMBER IN TOWN-HALL AT DETTELBACH, BAVARIA.

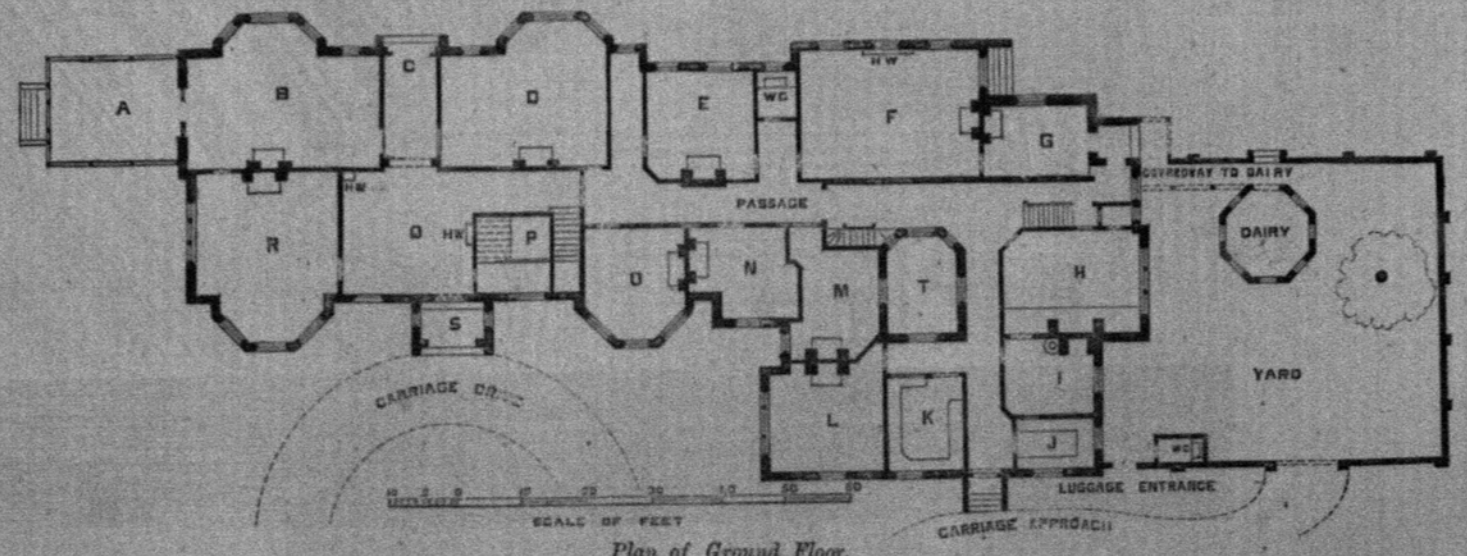
We have previously given a view of the interesting Town-hall, or Rath-haus, in the quaint little town of Dettelbach, near Würzburg.

It will be remembered by those who have seen our former illustration that this building is a large rectangular structure built over a stream, with a square porch attached to one of the longer sides. This porch is approached by two flights of stone steps, below which is a vaulted chamber used as a prison, and above the porch is a semi-octagonal chamber, which was originally a chapel or oratory. It is prettily vaulted in stone, and has a Late Gothic window in each face. The porch opens into a hall, with a large oak staircase. To the right and left of this hall are large chambers, with flat ceilings composed of huge beams of oak. These rooms now are used as a parochial school, and contain nothing remarkable. The rooms on the upper story are, however, very interesting. Opening from the upper hall or landing is the before-mentioned little chapel or oratory, and to the right of it is the remarkably interesting chamber represented in our illustration.

This room is about 46 ft. long by 25 ft. The ceiling is very noticeable: it is supported upon two principals, which are richly moulded, and these are connected by a series of purlins. There are no common rafters. This is not a *roof*, but simply a *ceiling*, as it takes quite a different form from the outer roof of the building, and is nearly 20 ft. below it. The ceiling is repeated over each of the four chambers in the upper story of the Rath-haus.

The sides of this Council Chamber are very picturesquely arranged. Each window is placed in a deep embrasure, formed by quasi-classical pilasters, adorned with medallions and ornamental panels. The seats formed in the window spaces are very picturesquely managed. All the windows in this chamber retain their old glazing, consisting of small circular panes of glass, and there is also some well-designed metal-work attached to the wooden casements. There are several curious old portraits of former *bürgermeisters* hung round the room, and some good furniture of the earlier portion of the eighteenth century.

RESIDENCE, WILDERWICK, EAST GRINSTEAD, SUSSEX.—Mr. Alfred Smith, Architect.



Plan of Ground Floor.

REFERENCES.
H.W. Hot-water Coils.
A. Conservatory.
B. Drawing Room.
C. Garden Entrance.
D. Dining Room.
E. Gentleman's Room.
F. Billiard Room.
G. Workshop.
H. Kitchen.
I. Scullery.
J. Brushing Room.

REFERENCES.
K. Larder.
L. Servants' Hall.
M. Butler's Room.
N. Housekeeper.
O. Store Room.
P. Q. Hall and principal Staircase, with Cloak Room, Water-closet &c., under.
R. Library.
S. Entrance Porch.
T. Open Court.

RESIDENCE, WILDERWICK, EAST GRINSTEAD, SUSSEX.

"WILDERWICK," which we illustrate in our present number by a perspective view of the *entrance front* and a *ground-plan*, is about two miles and a half from East Grinstead. The site of the house has been chosen both to command beautiful views of the surrounding country, and be in proximity to the fine-grown trees, which are always valuable in preventing a nude or raw appearance round a new house; but before building on this site it was necessary to make a mutual arrangement with the parish to divert the road to Lingfield, thereby shortening it considerably, and leaving the house sufficiently distant from the road.

The entrance-porch, 8 ft. square, opens into an entrance-hall, 36 ft. by 19 ft., which contains the principal staircase, and small cloak-room. The hall, being two stories in height, has a gallery leading to the bed-rooms, and is lighted by a sky-light, in addition to the windows. Immediately on the left of the entrance is the door to the library, 22 ft. by 19 ft. (with bay window), and opposite, on the right, is the door to the cloak-room. A corridor facing the entrance porch gives access, on the left, to a drawing-room, 30 ft. by 17 ft. (with bay window), which communicates by glass screen and door, with a conservatory, 20 ft. by 16 ft.; on the right to a dining-room, 25 ft. by 17 ft. (with bay window), and leads thence by double glass doors (protected externally by projecting oak barge-boarded roof) to the lawn and terrace. Passing through the swing-doors to the extreme right of the hall, we have, on the garden side of the corridor, a 5-ft. passage for light, which, being near the swing-door of the dining-room, is fitted up with a dinner-flap; a gentleman's room, 17 ft. by 16 ft.; a water-closet and lavatory; a billiard-room, 27 ft. 6 in. by 19 ft. 6 in., lighted from the roof, in addition to the windows (one of the latter has a slate hood, and hung as a casement, affords access to the garden); and a workshop, 16 ft. by 11 ft., which communicates with the billiard-room, as well as the garden. On the other side are a lady's store-room (fitted with lavatory), 15 ft. by 13 ft., with bay windows; housekeeper's-room, 14 ft. by 14 ft.; butler's room, 20 ft. by 14 ft., fitted with strong closet; and an open court for light, 15 ft. by 10 ft.; passing which (in the passage leading to back entrance), we have a kitchen, 22 ft. by 16 ft. (with small cook's pantry); a scullery, 13 ft. by 12 ft.; brushing-room, 12 ft. by 7 ft.; a servants' hall, 18 ft. by 15 ft.; and larder, 15 ft. by 12 ft. On the first floor are three good bed-rooms (with bay windows), three smaller bedrooms, two dressing-rooms, a boudoir, bath-room, and water-closet, in addition to which, and over the kitchen offices, are five maids' bed-rooms, housemaid's, and water-closet, two men's bed-rooms, and a large box-room. The men and maids have separate and distinct staircases to their rooms.

In the basement are coal, wine, and beer cellars, and game larder.

The external walls of the house are entirely constructed of the local stone (quarried by the proprietor), with square beds, and joints, and rough face, except the weatherings, cills, and window-heads, which are rubbed, and the dressings and quoins tooled. All the walls are lined inside with a half-brick wall, tied with iron to the stone wall, leaving a 2-in. space between them, to prevent dampness. The hollow space has also been made use of for ventilating the rooms at pleasure by means of sliding brass ventilators in the skirting. The roofs are covered with Delabole slates, and finished with tile cresting. The principal reception-rooms are fitted up with pitch-pine, and the panels of the doors and window backs are arranged so that the heart of the wood producing the figures comes in the centre of each panel. The staircase is also of pitch-pine, with turned and twisted balusters.

The estimated value of this house is called (in round numbers) 10,000*l.*, including conservatory and heating with hot water. Mr. J. T. Chappell, of London and Steyning, has carried out the works, from the designs, and under the superintendence of Mr. Alfred Smith, architect, of the Adelphi.

Reydon Church.—I wish some one would attack the cruel people who have whitewashed the grey stone walls of Reydon Church, in Suffolk, and further embellished the exterior with facings of gas pitch.—B.

MANAGEMENT OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

SIR,—Your youngest professional contemporary has of late taken such a truly filial interest in the welfare of the Institute that one can but regret when its advice is ill-timed or is based on assumptions which are not precisely in accordance with fact. In a leading article of last week, which refers, *inter alia*, to the financial condition of the Institute, we read as follows:—

"It appears that a considerable sum of money—not much less than 2,000*l.*—is annually expended in its support. This ought to produce tangible results. It would be false delicacy to overlook the fact that questions are often put to members by strangers, and even to leading members by others, bearing upon this point, which are not easy to answer."

Now, sir, as a plain matter of figures, the expenses of the Institute last year did not exceed 1,440*l.* I attend the evening meetings in Conduit-street pretty regularly, and I am not aware that any great curiosity is manifested by "strangers" as to what the details of these expenses may be. Still less am I disposed to believe that any member of the Institute can be ignorant on this point. Lord Dundreary has with truth observed that there are some things which *no* fellow can understand, and there may possibly be Fellows of the Institute who are puzzled by a debtor and creditor account; but inasmuch as a balance-sheet of receipts and disbursements is printed and sent every year to every member, what delicacy or difficulty there need be in answering questions on finance, I am at a loss to conceive. Referring to my own copy of this document for 1869, I find that the expenses of the Institute for that year (omitting shillings and pence for the sake of brevity) were as follow:—

Rent, fuel, and light	£264
Stationery, postage, and advertisements	54
Salaries and wages	386
Publication of Transactions: reporting, printing, and illustrations	211
General printing	159
Furniture, fittings, and repairs	59
Refreshments at evening meetings	22
Expenses of conversazione	116
Purchase of books for library	37
Money prizes and medals awarded	82
Donation to the Architectural Museum	25
Petty disbursements and sundries	22
	£1,428

I submit, sir, that this is no very large sum to represent the annual expenses of a society which includes about 600 members, which rents amply-sized and convenient premises in the best part of town; which retains in its service a secretary, a librarian, and a clerk; which publishes its Transactions once a fortnight during the session, well printed and well illustrated; which is liberal-handed with prizes and donations; which is constantly adding to the contents of its library; and which provides an annual entertainment for a thousand guests. After doing all this, the council managed last year to invest 384*l.* in Consols, and to carry forward a balance in hand of some 130*l.* to the present year's account. Does this look like deficient administration in finance?

But the article goes on to lament a supposed *décadence* in other respects:—

"There are not a few who are disposed to maintain that in that important function of concentration of energy, which is commonly called '*doing business*,' the management of the Institute for the last few years has not been so successful as it once was. The days of Mr. C. C. Nelson and Mr. Hayter Lewis are frequently recalled to memory, when benches are empty and affairs are tied up; and we must be bold enough to express the hope that . . . the future may soon become worthy of the penultimate past."

I will not, sir, pretend to gauge the precise significance of these remarks. Whose or what "affairs" the writer has observed tied up will probably remain a mystery to all but himself. For my own part, I am reminded of "the days of Mr. C. C. Nelson and Mr. Hayter Lewis," not "when benches are empty," but when they are well filled. It is possible that this may be the writer's meaning, though he says precisely the reverse: but a gentleman who believes in the "functions of concentration of energy," and in the "penultimate past" (why not, while we are about it, say the *paulo-post futuro?*), may be excused for being a little obscure, particularly when he devotes himself to that absorbing zoological pursuit,—the search for mares' nests.

In conclusion, sir, let me ask seriously whether there is, after all, so much to regret in the present conduct of affairs at the Institute? Is it nothing that the Voluntary Architectural Examination has been revived? that Mr. E. M. Barry's cause has been espoused so warmly? that the Institute has met the Builders' Society in friendly consultation for the public good? Is it nothing that it has offered additional encouragement to the art-student? that it has kept a watchful eye on the new Building Act? that its committees do their best to maintain a due respect for ancient monuments, and preserve the integrity of professional practice? Are its meetings really less well attended? its sessional papers less carefully edited? its official duties less conscientiously discharged now than formerly?

I leave these queries to be answered by any one who will give credit where credit is due, and who may be, like myself,

A PLAIN-SPOKEN FELLOW.

THE RIGHT TO THE ARCHITECT'S DRAWINGS.

SIR,—I see some judicial authorities seem to be of opinion that the original drawings of a building belong to the client, instead of the architect; if so, it suggests the following queries:—

Is the architect required to furnish *without charge* copies of the plans for the use of the contractor?

Is a sculptor entitled to retain the model from which he executes a statue which has been expressly designed for a client?

If I order a piece of machinery, can I claim all working drawings or models which may have been prepared for the use of the workmen in the manufacture of the same?

If I employ a solicitor to prepare a conveyance for sale of property, can I demand of him the draft copy?

If Baron B., or any other Judge, gives judgment against me in a cause, and I have consequently to pay the costs, am I entitled to demand the notes he takes on hearing the case?

A PUZZLED INDIVIDUAL.

ARCHITECTURAL EXHIBITION AND ARCHITECTURAL MUSEUM.

SIR,—The suggestion of "E. W. T.," in your last number, for an Architectural Exhibition in our Museum is one on which I should be glad to hear further, either from him or from others interested in the subject. Some years ago the idea was talked over by the officials of the Exhibition and the Museum; but although, as it then appeared, we had not space for so large a number of drawings as were displayed in Conduit-street, we might accommodate such as "E. W. T." refers to, and, in addition to the advantage he mentions, there would be the opportunity of looking at our own collection, not studied as much as it ought to be, considering its value and its convenient position.

As some expense in advertising, printing, &c., would be incurred, funds in addition to the present resources of the Museum would have to be provided,—perhaps by a fee for exhibition, or by exhibitors becoming members of the Museum. But would not the Exhibition committee themselves arrange with our council to continue their work in our Museum in the modified form suggested by "E. W. T."?

JOSEPH CLARKE, Hon. Sec.

MEMORIAL FOUNTAIN, GLASGOW.

COMPETITION.

SIR,—Nine months ago the Commissioners of the Glasgow Corporation Waterworks advertised for designs for a memorial fountain to commemorate the services of the late Lord Provost, Mr. R. Stewart; the cost of the fountain was not to exceed 4,000*l.*, and a premium of 50*l.* was to be given for the best design. It would appear that about fifty architects sent in drawings, and for eight months nothing has been known for certain what the Commissioners' intentions were about awarding the premium. The minds of the competitors were, however, set at rest by each receiving from the secretary one of the most impudent notes I ever read, dated the 9th of November, informing them that the Commissioners have agreed that the cost of the fountain shall not exceed 2,000*l.*, instead of 4,000*l.*, and they are further invited to do their work over again,—to send in "modified designs," is their pleasant way of stating it. But the impudence, meanness, and dishonesty of the affair lie in this—that they do not intend awarding the premium already wrought for by the man who has sent in the best design according to the first

invitation, and which I hold they are legally and morally bound to do.

My object in writing to you now is, first, to call attention to the rascality of this; and, in the second place, to call on the competiting architects to insist on the first competition being decided, and the premium paid, as promised, before the second one goes on.

I hope it is quite unnecessary to say that no architect who has the honour of his profession at heart will so far demean himself as to take any notice of this second call for new designs till the present competition be decided.

A Competitor.*

BROOKS'S BANK, MANCHESTER.

Sir,—In speaking of the new bank illustrated in your pages, you justly observe that "Mr. Truefitt has shown, as usual, much originality in the design;" but there is something not quite satisfactory about the appearance of the large porch as shown in your illustration. What is the construction of the sides of the porch: is it an arch or a lintel? The jointing of the stones, so far as indicated, appears to be vertical, which leads to the conclusion that the masonry is, in fact, supported across the sides of the porch by what appears to be an iron girder, forming a straight soffit below; but, if so, why use the arch form in the masonry, thus suggesting the idea of an outward thrust tending to push over the angle column? And, again, in the front of the porch, where the bearing for the masonry is shorter, are the three flat arches really arches, or lintels? The absence of any indication of jointing leads to the latter supposition; but, if so, why cut away the stone into the arch form, and thereby weaken its bearing capability, besides incurring a waste of labour and material? Perhaps Mr. Truefitt can explain; but the feature as shown in your engraving is not quite satisfactory to the eye of

A Critic.

Thanking you for enabling me at once to answer "A Critic's" question as to the construction of the porch at Brooks's Bank, Manchester, I beg to say that the arches, front, and sides are all properly jointed (and not vertically so); that the T iron beams, fringed below and perforated ornamentally, form permanent "centres," which give an appearance of, as well as actual strength to, the arches; and this would not have been gained if they were tied together, as is often the case, with hidden rods.

The only other way of treating these openings in stone would have been with straight lintels and upright joints (single stones being out of the question), and with iron supports visible or hidden. I am afraid, however, that your correspondent's eye would have been offended much more by that mode of treatment.

George Truefitt.

CEILINGS AND THEIR CONSTRUCTION.

It may appear at first sight somewhat absurd that I should trouble you with a communication on the above, but having had a ceiling fail in a building in which great interest had been taken, and having heard recently of many similar instances, I thought the subject worthy of investigation, involving, as it may, some of us in trouble and certainly in expense: so to the point. The ordinary mode of procedure is as follows:—Laths are fixed to the joists, very often closely together, and frequently the ends of one row are nailed over the ends of the adjoining row: the coarse stuff, as well as the fine, is "run." Thames sand is used, and the plasterer, to get over his work as quickly and conveniently to himself as possible, forms his screed across the ceiling with too great a substance of coarse stuff, and consequently unduly weights the laths; add to the foregoing the very short hair which only is at this time to be obtained, and you are in a possession of the causes of failure. I will now suggest what I believe to be a remedy. Though mentioned lastly, yet by no means least in importance, is the hair supplied to us. Why is it so short? The answer is that in these days every effort is made to improve the breed of cattle, and the finer the breed, the shorter the hair. It is true, we have importations of hides with long hair from cold countries, and with coarse shorter hair from the River Plate and Monte Video, but for building purposes this hair is no longer available, and for the following reasons:—The tanner sells to a middle man, who assorts the hair, and sells the longer to blanket and felt manufacturers: so if we insist upon long hair we must describe goat's hair: this in the wet is 3s. 6d. per bushel. Double fir laths should be used instead of the thinner varieties, known as single fir. Thames sand makes the stuff too short, and should not be used. Sand obtained from roads that have been metalled with ordinary pit gravel is the best. Plasterers should be restrained from overloading ceilings, which should have only the minimum substance upon them; and, lastly, coarse stuff should not be "run," because the process takes from its strength, and that it does do so is evidenced by the fact that run stuff seldom or never blisters; if run coarse stuff is used it should be for the floated coat only. The pricking-up coat should be made after the old manner, that is, chalk-lime should be slaked, road sand added, the whole turned up in a heap and allowed to remain for a time, then passed through a screen, and afterwards made up with a large quantity of hair and water, and allowed to remain three or four weeks before use. This will prevent blistering, and thus may sound ceilings be obtained.

T. E. Knightley.

* Two other letters to same effect received.

THE SCULPTURE IN THE BRITISH MUSEUM.

Sir,—From the manner in which a letter in your paper of October 8th, on the cleaning of the sculpture in the British Museum, has more than once been brought to my notice, it seems to be assumed that I am in some way responsible for the care and material safety of the collection, and for the dangerous treatment it is said by your correspondent to be undergoing at this time. I shall be greatly obliged if you will allow me to state that I have no connexion whatever with the British Museum. Some time since I received a letter from the secretary, informing me that the trustees did not consider the services of a sculptor were required in the sculpture department, and my attendance closed.

Richd. Westmacott, R.A.

A LONG STRUGGLE.

We have reason to believe that the following statement is correct. We go out of our way to print it, in the hope that one of our readers may find himself able to give a hand to a man who appears to have persevered under difficulties:—

Sir,—Believing you to be a friend of the working man, I have taken the liberty to address these lines to you, thinking you might be able and willing to give me some suitable advice. A sketch of my life will, I think, be the best way of making you acquainted with my wants of the present.

My age is forty-nine years; I am the eldest son of a working gardener, who was too poor to give me any education more than could be obtained at an old-fashioned day-school, kept by an old man who had seen better days. He usually slept half the time away: so my chance of acquiring knowledge was not much, especially as I never went after I was ten years old. I learnt to read and write and cypher a little. I first went to work in the garden; after that I went to a coach-painter's for a year, and then three years at a wire factory in London, the working hours of which were from 6 a.m. to 8 p.m. As I had to walk four miles, I used to get up at four o'clock in the morning, and it was generally half-past nine at night when I reached home. Not much time, you will say, for a boy to improve himself. But I advanced a little. Every penny I could get went for books, which I read with avidity. Poetry I had a great predilection for; I even tried my hand at versifying. I tried also at drawing and painting in water-colours, but did not succeed, for want of technical knowledge; for I found no friend to assist me in my studies. After a deal of practice, I became a tolerable letter-writer. Any fresh character I saw I could copy with accuracy.

When I was sixteen years old my mother died, and I was sent into Berkshire, to an uncle, a master-builder, doing a good business. There my mind received a new bias. I saw that buildings were delineated on paper before erection: consequently there was some scope for taste and imagination. I purchased a case of second-hand instruments, and in a little time I became an expert draughtsman and colourist. Finding that many more things were requisite in the building trade, I went into geometry, arithmetic, mensuration, &c. Having a great aptitude for figures, I was not satisfied until I had mastered land and timber measuring and gauging. Some of these things I have now almost forgotten, for the want of practice. While I was learning those things I did not omit to seek practical knowledge: I worked at bricklaying, carpentry, and masonry. Not that I can work at either of those branches like a man who has made only one of them his study for life, but I thoroughly know how they are to be done. To vary my amusements I next looked to music, and learned so far as to play tolerably on the violin and harmonicon. I next took to writing poetry, of which I have inclosed you some specimens, which were published in a local paper in Bedfordshire.

At the death of my uncle the business fell to pieces, and I had to look for employment elsewhere. I have been journeyman, foreman, &c., in various parts of the country. I have built shops, dwelling-houses, farm-buildings, railway stations, schools, churches, &c., some from my own designs; but I am now, with a large family and invalid wife, in want of a job.

What I profess to do is to take charge of any sort of work in the building trade, set out and measure up the same, take out quantities, prepare working and other drawings, measure land or timber, keep a prime-cost account, keep time, &c. I think I should be useful to a surveyor or builder. My character will bear any amount of investigation as regards honesty, industry, and sobriety. I have not stated anything but what is true. My drawings will speak for themselves, and for the other things a few minutes' examination would be sufficient. For these last six weeks I have advertised, but have not met with anything. My finances are now getting low, and I should like to meet with something to bear me over the winter; I am not particular what, so that I can live by it. If it is in your power to assist me to a job, I shall be extremely obliged to you, and shall feel ever grateful for the kindness.

I have tried all my life to bring my family up in a respectable manner, and I wish to give my boys a better start in life than I had, but at the present I see no prospect of doing so, for I have only been able to exist by studying the strictest economy.

W. M.

CHURCH BUILDING AT THE PRESENT TIME.

A few observations made by Mr. Godwin at the Institute last week brought forcibly to mind the enormous extent to which church and chapel building and restoration have for some time been carried on by the Established Church, the Nonconformists, and the Roman Catholics. The following, from a Doncaster paper, bears on the subject:—

"The church-building of the present day does not depend on great feudal lords, but upon the combined efforts of every class according to their means. The new church of St. George, Doncaster, must have cost, from first to last, not far short of 60,000*l.* In the thirteenth or fourteenth century the cost would have been about 5,000*l.* Ripon Cathedral has been restored at a cost of 40,000*l.*; the parish church of Grantham, at a cost of 20,000*l.* Within the last fifty years the number of churches in the parish of Sheffield has increased from four to about thirty. The Bishop of Ripon stated at his visitation last month, that the number of churches consecrated in his diocese was seventeen in the three years ending 1866, and 27 in the three years ending 1869. The Bishop of Lincoln reported an equally satisfactory progress in his great diocese. In the course of the last three years sixteen new churches had been built in the diocese, and seventy-seven churches had been rebuilt, restored, or enlarged; and at a meeting at Nottingham, on Monday, to promote a lay organisation to co-operate with the clergy, it was stated that during the past few years 400,000*l.* had been expended in the county in building and restoring churches. We should feel obliged if any of our clerical readers would supply us with the statistics of church-building and church restorations in all the dioceses of England for the last few years."

A. B. C.

Re HALIFAX PERMANENT BENEFIT BUILDING SOCIETY.

Sir,—Will you allow a competitor to reply to the inquiry made by "Suspense," as I am afraid he would have to remain longer in suspense if he had to await some official information. I chanced to learn the following in respect of the matter, and when I tell him that the building has been already commenced, he will perhaps be surprised. The design first in order of merit, as he well knows, was put aside on the score of cost. The second seems to have been more successful, as Mr. Samuel Jackson, of Bradford, the author of it, is carrying out the work,—how, I cannot say; for I have had the opportunity of thoroughly examining the perspective of this, as also the one rejected, and I must say they present a very striking resemblance to each other in point of cost. Somehow the second premium is awarded, but the third-best has not yet been found by the committee. One competitor, I was told, had withdrawn his design, which will probably be the course followed by others, to get back their designs.

A Competitor.

ROYAL ACADEMY OF ARTS.

INSTRUCTIONS FOR ADMISSION OF STUDENTS IN ARCHITECTURE.

Questions respecting the admission of architectural students to the Royal Academy, and the proposed course of study there, are so constantly being made in the professional journals, that I should feel obliged if you could insert the enclosed "Instructions for the Admission of Students."

As regards the proposed course, I will take the earliest opportunity of communicating it to you, so soon as the Council of the Royal Academy may have decided on it.

R. Phené Spiers,
Master of the Architectural School.

Each candidate to be a student in architecture shall present to the Council a certificate from an architect-member of the Royal Academy, of the Royal Institute of British Architects, or of any other public institution for teaching art and science, certifying that the applicant has followed up the study of architecture and architectural drawing, and has acquired a reasonable degree of proficiency in the same. The applicant shall further submit to the Council three drawings (not necessarily made for the occasion), to consist of a plan and elevation of some building, and a drawing of ornament from the cast; such drawings being declared by him, in writing, to have been wholly executed by him, and the same being attested by the person recommending him, to the best of his knowledge and belief. If such certificate and drawings are approved by the Council, the candidate shall be required to make, in

the Academy, such drawings or designs as may be required—the subjects to be determined by the Council; which drawings, together with the certificate before referred to, shall be laid before the Council; and if approved, the candidate will be admitted as student for seven years, in like manner as other students.

Those who have been unsuccessful in their first endeavours can renew their application at any subsequent period, by again going through the prescribed forms.

All instruction in the Academy is gratuitous, the student providing his own materials.

Letters and packages from the country must be addressed, prepaid, to the Registrar, Royal Academy of Arts, Burlington House. Persons resident in London or its vicinity must apply personally.

Lectures, to which probationers and students have access, are given, on,—Architecture, by Mr. G. Gilbert Scott, R.A.; Sculpture, by Mr. Henry Weekes, R.A.; Painting, by Mr. Charles West Cope, R.A.; Anatomy, by Mr. Richard Partridge; Perspective, by Mr. Henry Alexander Bowler.

Master of the Architectural School, R. Phené Spiers.

The Library, containing a very valuable collection of works of art and architecture, is open to all students on Mondays, from 10 a.m. to 3 p.m., and 4 p.m. to 5 p.m.; and on Tuesdays and Thursdays, from 5 to 8 p.m.

GREASE FROM VELLUM.

Can any of your readers mention a process for extracting grease spots from the pages of an illuminated book? The vellum in question is modern. L. H. B.

THE STRIKE AT EATON HALL.

Sir,—With reference to the strike of masons and labourers under the employ of Messrs. Smith, Taylor, & Co., builders, at Eaton Hall, Cheshire, I will, with your permission, state the facts of the case.

There were certain arrangements in existence which the firm could not tolerate any longer; for instance, in connexion with the fixers alone, there were thirteen fixers, twenty-one fitters or jointers, ninety-two labourers, with only ninety-one banker masons, on a very elaborate job. The work was costing nearly as much per cube foot fixing as preparing. The firm were perfectly satisfied with the amount of work performed by each man (taking in consideration the facility afforded him). The change consisted in supplying each fixer with materials by a system of tram-roads and other mechanical means; so that we should have doubled the quantity of work done by each fixer, without calling on him for any extra exertion (or, as they said, endangering their lives). The men, or, more strictly speaking, the mob of masons and their labourers, would not listen to a word of explanation, but struck work before I had been on the works twenty-four hours. They at once resolved themselves into a committee of the whole body (after telling me they would not have a b—— stranger there), for the purpose of howling and threatening, which, I suppose, is the fashion of the Cheshire masons and their labourers of discussing what they term their serious grievances.

The Stranger they would not have down there.

CAN AN ARCHITECT'S "YOUNG MAN" BE A GENTLEMAN?

Sir,—I have ever observed your willingness to aid in a good action. Grant me, then, a corner of your paper that I may pour some oil on the troubled waters of "J. J.'s" stormy bosom:—

My dear "J. J."—You arrived at the house of Æsculapius, and, feeling yourself a Wren, twice upon the knocker you claimed admittance. Awaiting the response, you stood radiant with intellect; the five orders shining out of your Vitruvian eyes, and the "Early, Middle, and Late Pointed" peeping out of your *hit*. There you stood, the perfect type of a perfect gentleman, before the castle of an equal—more probably of an inferior—at whose gate the fortune of war compelled you to lay down your sword,—I mean your saw. But *Sans-bones* saw it not. He saw in double knocks anatomy and filthy lucre. But, glancing in the mirror cunningly arranged outside his window, what *did* he see? "A common carpenter"—it could not be—one of the lowly herd of artizans. And yet it was so. With maddening wrath he pounced upon you. "Man of glue," he said, "made from the filth of knacker's yard, down on your knees. How dare you thus ——." But let me not recall his brutishness, but point out your revenge.

Take a house—a mansion—near the den of this savage. Let it be such a one as your architectural mind has so often pictured, and furnish it as your elegant taste may dictate. Keep six lacqueys for his one; a four-in-hand where he keeps a one-horse chaise. Pass him on the road; distance him everywhere. Feign illness; send for him; and should he dare to raise your knocker twice, take no apology, but tar and feather him. Do this, and won't you chuckle as you sip your port and read his whining letter in the *Lancet*, inquiring, Can a surgeon be a gentleman? My good "J. J.," add to your knowledge of common carpentry, and to your uncommon knowledge of architecture, a few grains of common sense, and you will find the mixture uncommonly soothing to your nerves. Increase the latter ingredient, and your present nervous condition will wear off. Your attacks of nightmare will be less frequent. I will state a case where the symptoms were much worse than yours, where common sense had to be administered in homœopathic doses; but I am happy to state that the patient is now quite recovered, and able to go about like any other man.

Very early in life Talbot (who is now thirty-six) served his articles with an architect. Like you, he laboured to raise himself above his fellows; and in course of time, so far as becoming entitled to add to his name ten letters, expressive of three several distinctions, he succeeded. His spare hours and spare coin were devoted to the effort. With what result? His pretensions caused him to be sneered at. He became ill,—you know the way the disease sets in. But by the constant injection of common sense under his thin skin, he gradually came round, and is at present a good strong architectural *hack*. If he goes, on his employer's business, to the house of a client, whether an apothecary or a pawnbroker, his knock is the most insinuating; for he is aware that he is only Mr. C.'s clerk, or Mr. C.'s *young man*, and his knock is based on the style of the visiting governess, transposed to a much lower key. His modest knock saves his dignity many a knock down. The apothecary or the pawnbroker is so taken with it that he will sometimes, in a gush of amiability, condescend to make a remark touching the state of the weather; but, of course, he knows better than to place himself on any more familiar footing with Mr. C.'s young man, a young man that he has more than once seen blown sky high, a young man that Mr. C. would not make nearly as familiar with as he does with his coachman. Now, Mr. C. himself expects Talbot to be a man of artistic taste and very refined feeling, fully capable of realising in form and colour all manner of grand poetic conceptions. Why should he not be so? He is paid for it. But what business has he to mind if he is more frequently met with a frown than a smile? What right has he to permit his poetic feelings to be blunted with the recollection that his shortcomings are never forgotten, his successes never lauded? Writing to Captain Hill, a client, Mr. C. says,—"My young man, Talbot, is sufficiently intelligent to see to the matters to which you refer; I shall send him over to-morrow." Talbot goes; and, having seen to the matters referred to, but not having been *seen* by Captain Hill, who could not see an architect's young man,—no, not through a microscope,—Talbot receives intimation, through the butler, that the servants are at dinner in the hall. He declines the invitation, and takes a pick at an inn in the neighbourhood. He has long since discovered that an architect's *hack* cannot be a gentleman, and he accepts the situation with resignation. But he sometimes asks himself the question whether an architect can be a gentleman; and if so, why he is not so more frequently. Henry Tobin.

THE RIVER. MDCCCLXX.

Instar Omnium.

O River of dismal haunts!
Livid, discolour'd, and changed;
Once thou wert clear to thy founts,
And death was from thee estranged.

Now thou art hellish, in sooth,
Rife with the breath of disease,—
A river of blood, and, to boot,
A river of wealth 'midst these.

Into thee is it still meet
The City should cast foul slime,
While law in the public street
Makes nuisances a crime?

O River of myriad ills!
Pure at your primal source,
In turning a thousand mills,
You're foul'd at last perforce.

Factories, reeking with fumes
And sewage, seething and fell,
Oozing its way 'neath the tombs,
Making the river a hell.

Roll on, and never roll back,
E'en with the flow of the tide;
Roll on, most putrid and black,
Till our city is sorely tried.

But warning cometh in vain,
We wallow still on in filth,
Choking each sewer and drain,
And building as Babel was built.

The husband, and wife, and child
Are craving for light and room,
For water and air undefiled;
And must they crave on till doom?

O Statesmen, look to the poor,
Stricken and dowerless, who
Can but pray to God, and endure,
The while looking up to you.

C. H. C.

APROPOS CHARADE.

My first is heard where stock, and shares,
And money most abound;
The sound suggests an ancient man,
Weak, wrinkled, silver-crown'd.

My second has no past, no future,
Only the present day;
'Tis here, inexorable as Fate,
And it never goes away.

My whole lived in the ancient days,
So very fair and bright,
That modern time has named from him
Her fairest, gayest sight.

Fierce were the men of ancient days;
They slew my beauteous whole;
But fiercer yet the men who thirst
For his modern namesake's soul.—A. H. S.

Ans.—PARIS.

ERRONEOUS ESTIMATING.

Sir,—Referring so the two lists of tenders commented on in a recent number, I find that taking the list, "the alterations and additions to Nos. 3 & 5, Buckingham Palace-road," the average is 1,521*l.*; that leaving out the first and last two, the average is 1,566*l.*, so that the lowest tender is nearly one-half the average.

For the "Odd Fellows' Hall," the lowest tender is two-thirds the average. It would be interesting, I think, to members of our profession if the architects' estimates in these instances were published, as I am a little at a loss to know on what principle tenders so much lower than the average (especially from quantities) can be carried out.

A Surveyor in Practice many Years.*

* We have received some statements concerning the Buckingham Palace Road tenders which are so remarkable that we must look at them again before we decide as to publishing them.—Ed.

THE CHELSEA OFFICIALS AND THE METROPOLITAN LOCAL MANAGEMENT ACT.

Mr. Daniel Wyatt, of Eldon-terrace, Maude-grove, Fulham-road, was summoned to Westminster Police Court by the parish of St. Luke's, Chelsea, for neglecting to pay the sum of 27*l.* 14*s.*, being his share of the expense of paving the said terrace. Mr. Rayment, barrister, instructed by the solicitors to the vestry, prosecuted; and Mr. John Evans, of John-street, Bedford-row, defended.

The short facts are these:—On the 26th of September, 1867, a resolution was come to by the vestry to take to and make up Maude-grove, and an order was served upon the inhabitants to that effect. The parish subsequently did what they deemed necessary in order to put the street in thorough repair, and it was contended that the sum charged to the defendant was a fair one, and for which he was liable according to the Act of Parliament.

For the defence, Mr. Evans, who defended in the absence of Mr. Straight, tendered himself as a witness, and from his testimony and that of other persons it appeared that Mr. Evans built the whole of the houses in the grove, at a cost of 20,000*l.*, and early in 1867 asked the vestry to make the road and pave. In September they passed a resolution adopting the street; but in consequence of the opposition raised by some of the inhabitants as to the excessive cost, they subsequently abandoned it. The street was impassable, the property deteriorating, and, after repeated applications to the vestry to complete the work, he did it at a cost of 300*l.*, made the road, and paved the fronts of the whole twenty houses, the work being done thoroughly and well. Subsequently the vestry came to the decision, in January last, that the work had not been properly executed, and although Mr. Pattison, the surveyor to the parish, had sanctioned the work and put down the pegs for the levels himself, the stone was all taken up, a quantity of it broken with hammers and carted away, and the remainder relaid, and the defendant therefore held that on this ground alone, without entering upon other points, he was not entitled to pay, as the vestry had not paved within the meaning of the Act.

Mr. Woolrych said it was a hard case for Mr. Evans. If, however, the vestry had proved that they had done work which was paving within the meaning of the Act he must have made an order. This has not been done, and therefore he should dismiss the summons for want of evidence.

Mr. Rayment asked his worship to state a case for the Court of Queen's Bench.

Mr. Woolrych said he should decline to do so. They would have to serve him with a rule, when he should say that certain resolutions were come to and an order made; that this order had never been enforced and still existed; that the inhabitants were compelled to pave their street; and that afterwards the vestry went there, pulled the stones up, broke some, and put the others down again. He acknowledged the supreme power of vestries, but at the same time a magistrate was not a puppet, who simply sat on the bench to register their edicts and decide for them without a sufficient proof. They had behaved very harshly in this matter, but still, as he had said before, he thought he should be compelled to make an order. If they brought sufficient proof, and if Mr. Pattison were so far compromised that they could not bring him into court, the barrister, or some one who knew the facts, would do, but not a clerk who sat behind a desk and knew nothing of his own knowledge.

Subsequently, after a great deal of argument, the case was adjourned for a fortnight.

COUNTRY PATHS.

Sir,—Mr. G. R Jesse's suggestion that the Ordnance maps should define public footpaths and byways, to preserve or secure the right of way, is worthy of notice; but it might be difficult to do so, on account of confined space. The definition would aid travellers and pedestrians, as I can testify from experience. It has, I believe, been decided recently by the common-law judges, that a footpath may be ploughed up by the land-owner legally, to the prejudice of the public, provided that the right of way is preserved. Chr. Cooke.

MONUMENTAL.

Statue of the Prince Consort at Cambridge.—The Syndicate appointed June 2nd, 1870, "to consider the best site for the statue of his Royal Highness the Prince Consort, and to report thereon to the Senate," have made a report to that body, recommending that the statues of King George I. and King George II. be removed from their present sites and placed at the west end of the Senate House, one on the right hand and the other on the left of the Chancellor's chair, and that the site opposite the south doors of the Senate House be appropriated to the statue of the Prince Consort, the south doors being made to open so that this entrance may be used.

Dean M'Neile's Statue.—A very long and bitter discussion has taken place in the Liverpool Town Council as to a statue subscribed for by the admirers of Dean M'Neile, of Ripon, and formerly of Liverpool, which had been presented to the Corporation. The question was whether it should be erected in St. George's Hall. The matter was opposed by all the Roman Catholic members, on the ground that the bitter manner in which the dean had assailed their creed, slandered its members, and ridiculed its ministers, would cause them to regard the installation of the statue as a standing insult. The

motion was also opposed by some Dissenters and by some members of the Church of England, upon the ground that M'Neile enjoyed too local a fame, and was also the exponent of too sectional a portion of the Church of England to be entitled to the distinction. Other Dissenters supported the motion upon the hope that in future all local men of distinction, of whatever creed or party, would be entitled to have their memories similarly honoured. The motion to erect the statue was carried by thirty-six to sixteen.

Removal of the Thorneycroft Statue at Wolverhampton.—At a special meeting of the Town Council, held a fortnight ago, a resolution was unanimously agreed to, for the appointment of a deputation "to confer with the family of the late Mr. George Benjamin Thorneycroft, with a view of obtaining their sanction to the removal of the marble statue of the late Mr. Thorneycroft, the first Mayor of this Borough, from its present position in the cemetery grounds to the vestibule, or public hall, of the new Corporation buildings in North-street." The family expressed themselves perfectly willing to acquiesce in the proposal to remove the statue to the new town-hall, subject only to the condition that it should be removed under the superintendence of Mr. Thornycroft, by whom the statue was chiselled. We believe the Cemetery Company have the power to insist on the statue remaining where it is, but no objection is anticipated.

Memorials of the late Sir James Young Simpson, Bart.—The London and Edinburgh Committees have united their efforts, and resolved to issue a joint circular to the friends and admirers of Sir James Simpson. The form of the memorial agreed upon is:—1st, a monument and statue in Edinburgh; 2nd, a marble bust in Westminster Abbey; 3rd, a hospital in Edinburgh for the diseases of women, constructed on those principles which Sir James so often and so clearly enforced; 4th, similar hospitals in London and Dublin, should sufficient funds be obtained.

Monument to the late Robert Scott Lauder, R.S.A.—The pupils of this distinguished Scottish artist, who during ten years taught the students of art in the School of Design in Edinburgh, have just erected to his memory a monument in the Warriston Cemetery, at Edinburgh. The monument, which has been executed and designed by Mr. John Hutchinson, R.S.A., is a monolith of Sicilian marble, in which, in a circular panel, is inserted an alto-relievo head of Mr. Lauder, chiselled in the finest statuary marble. Among his pupils were Herdman, Orchardson, the Burrs, Cameron, Petty, Graham, M'Whirter, Hutchison, &c. The monument has been inaugurated in the presence of the subscribers, who have handed it over to the care of Dr. Lauder, representative of the family.

CHURCH-BUILDING NEWS.

Hull.—The newly-erected church of St. Matthew, Anlaby-road, Hull, has been consecrated by the Archbishop of York. The style of architecture is Gothic of the thirteenth century. The building comprises clearstoried nave, with north and south aisles and a chancel, terminating with semi-octagonal apse, having organ-chamber on the north side, and clergy and choir vestries on the south side. Under these is placed the heating chamber. At the east end of the north aisle is placed the tower with spire, and the communication to the ringing-chamber and belfry-stages is by a spiral stone staircase. The entrances to the church are by the north porch and west doorway. There is also a separate entrance to the vestries. The church is constructed of brick and plastered internally. The windows of the aisles and chancel are of three lights, with pierced traceried heads. The clearstory has tripled lights, with pierced and cusped heads, and there are circular traceried windows to the clearstory of the chancel. The west end has coupled two-light traceried windows, with large traceried rose-window over. The ringing-chamber stage of the tower is arcaded and lighted by long narrow openings. The belfry-stage has coupled two-light openings on each face, with stone shafts and traceried heads. The spire has stone lucarnes on each face, with shafts with traceried canopies, surmounted by crosses. The walls are faced externally with white brick relieved by red brick arches and bands, and chamfered and moulded brick jambs and arches to the several windows, doors, &c. The spire (not yet erected) is to be constructed of brick. The whole of the stone intended to be carved is left in block. The roofs throughout are slated, and surmounted with red earthen ridge cresting. They are open-timbered throughout with framed rafters, covered with wrought boarding. The chancel roof is boarded on the under side of the rafters, and divided into panels by chamfered ribs. There are wood floors to the organ-chamber and vestry, and under all the seating. The seats are open benches, with solid ends cut ornamentally. Wrought-iron gates are to be placed at the entrance porch and to the churchyard from the Anlaby-road. The church is heated by means of hot air. The internal dimensions of the building are:—Length, 123 ft. 3 in.; width, 54 ft.; height from nave floor to ridge, 52 ft. 6 in. The height of the tower and spire when completed will be 157 ft. Accommodation is provided in the church for over 800 adults, and the total cost of the building, including fence walling, is 4,500*l*. Mr. C. Hutchinson, Hull, was the contractor for the brickwork, masonry, plastering, carpenter, joiner, and painters' work; Messrs. Pycock & Sons, Leeds, have done the slaters' work; Mr. G. Wilson, Leeds, the plumbing and glazing; and Messrs. Heaps & Robinson, Leeds, have fixed the ironwork and heating apparatus. A bell supplied by Messrs. Mears & Co., London, has been fixed by Mr. T. Walker, of Lowgate, for use until the new peal of six can be obtained. A small organ for temporary use has been obtained of Messrs. Forster & Andrews. The architects were Messrs. Adams & Kelly, of Leeds. The estimated cost of the design was 4,500*l*. The site besides was valued at 1,500*l*.

Weston-super-Mare. — The parish church of Worle, Weston-super-Mare, having been restored under the superintendence of Mr. Norton, was re-opened on All Saints' Day. Open benches of stained deal have taken the places of high pews, the gallery has been dispensed with, and the twisted pillars and falling arches have been set in proper order. An arcade of arches divides the nave from the north aisle, and on the north side of the chancel a chapel has been erected, parclosed off by carved oak screens; this chapel serves as an organ-chamber and a vestry, besides providing accommodation for the school children. Two windows have been placed in the south side by the Rev. W. C. Fox, as a memorial of his grandparents. Throughout the restoration the many antiquities with which the edifice abounds have been preserved, and in making the necessary alterations many objects of interest have been discovered. The floors are laid with encaustic tiles. The altar dais is of Irish black marble, also inlaid with encaustic tiles. There is an oak reredos, at present unfinished, which is intended hereafter to contain sculptured subjects. At the top and base of the reredos is a carving, in sycamore wood, by the Misses Wodehouse (daughters of the late vicar). The roofs of the whole building are of open timber, with tracery principals and moulded cornices. The total cost of the work will exceed 1,500*l*.

Henley-on-Thames. — The re-opening of St. Nicholas Church, Remenham, has taken place. The works, which have occupied the whole of the preceding summer, consist of the addition of a south aisle, new porch and vestry, the removal of the galleries and of the whole of the interior fittings, which have been replaced by open sittings, the windows being filled with stained glass. The architect was Mr. Rowland Plumbe, of London, and the works were executed by Mr. Owthwaite, of Henley.

SCHOOL-BUILDING NEWS.

Darlington. — The foundation-stone of St. William's Roman Catholic Schools, to be erected on Albert-hill, Darlington, has been laid. The buildings have been designed in the Gothic style by Mr. Richard Robinson, of Darlington, architect, and comprise a school-room, 122 ft. long and 24 ft. wide; a class-room, 15 ft. by 12 ft. 9 in., with two large porches, and separate yards for boys and girls. The exteriors of the principal fronts are of red pressed bricks, interspersed with bands of black bricks, stone rills, and key-stones, whilst the interior will have white bricks for the lower part and plaster above, with an open-timbered roof, stained and varnished. The north front has ten coupled lancet windows, with a triple lancet window in the centre, over which rises a central gable, with projecting roof, supported by wood brackets or stone corbels, and under this gable is a stone niche for the reception of a carved figure. The east and west fronts have large triple lights, the upper front filled in with stone tracery, intended to receive coloured or stained glass. These fronts have large projecting gables, supported by bold timber brackets or stone corbels, the whole finished with wood mouldings. In the centre of the school roof is a large bell-turret of open timber work, covered with a slated spire, surmounted by a gilded cross. There will also be ornamental iron crosses on each gable. The schools will be warmed by hot-water pipes, and ventilated by open windows, Sheringham's patent air-valves, and a ventilating turret in the roof. They will provide accommodation for 370 children, according to the recent requirement of 8 square feet for each child. The contractors are—for brick, stone, and plaster work, Messrs. Michael Watson & Son; for carpenter and joiners' work, Messrs. Laverick & Forster; for plumber and glaziers' work, Mr. T. Johnson, Tubwell-row; for slaters' work, Messrs. Wharton.

Friar Mere (near Oldham).—St. Thomas's new school buildings, situated in Delph, and in connexion with Friar Mere parish, were commenced in April last, and opened on October 6th. The plan of these schools is symmetrical, and is arranged in accordance with the regulations of the Committee of Council on Education. The entrance porches are placed at opposite ends of the building, and open into inclosed vestibules with lavatories attached. They give access to schoolrooms, which, by the removal of a moveable partition, can be thrown into one large room, 70 ft. in length. The class-rooms for both boys and girls form a projecting wing at the back, and open out from the large schoolrooms. The style of the building is Early Decorated Gothic. The principal front has a large centre gable, with three-light windows filled in with geometrical tracery, and surmounted by a belfry with angle shafts and canopies. The porches at each end have double pointed arches and gables, and between these and the centre are four three-light windows divided by stone mullions. The roof is hipped at each end of the building, and terminated with wrought-iron finials. The fall of the ground has permitted a terrace to be formed to the front, with centre flight of steps and entrance gateway. The play-grounds for boys and girls are placed at the back. In the interior the roof and timbers, which rest upon moulded stone corbels, are exposed, stained and varnished. The rooms are lined with pressed brickwork to the cill line. Abundant light has been given to every part, and ventilation has been provided. The contractors were Messrs. J. & J. Whitehead, masons, Marsden; Messrs. Gibson & Maude, joiners, Keighley; Mr. Charles Nelson, plumber, Bradford; Messrs. Hill & Nelson, slaters, Wakefield and Batley; Messrs. J. Whitehead & Son, plasterers and painters, Dob Cross, Saddleworth; and Mr. Edward Worroll, Uppermill, supplied the gas-fittings. The architects were Messrs. Lockwood & Mawson, of Bradford and London.

Kelsale.—The new school buildings which have been provided for Kelsale and Carlton have been opened. The building was formerly called the "Workhouse," and divided into several tenements. It was one of those large old-fashioned buildings which had more pretension to strength and stability than beauty of architecture, but which was capable of being converted into something more useful; and this has been done by taking out the old inside and replacing it with a new one. The outside has also had new roof, chimneys, windows, entrance-door, &c., and the result is that school accommodation for 200 or more children has been provided; comprising three large and lofty schoolrooms, for infants, boys, and girls, with separate class-rooms, offices, and apartments for a resident master and mistress. The works have been performed by Mr. Thomas Denny and Mr. William Kerridge, both of Kelsale, under the supervision of the architect, Mr. Norman Shaw, of London, at a cost of something like 600*l*.

Elland.—The new Wesleyan School building, which has been erected on the site of the old school, adjoining the chapel, in Eastgate, is now approaching completion, and although not yet ready for permanent occupation, it is opened. On the ground floor are a room intended to be used as a day school, 26 ft. by 27 ft.; two class-rooms, 11 ft. by 15 ft.; a lumber-room, 10 ft. by 11 ft.; and a kitchen, of the same size. The upper room, which will be used as a Sunday school, is 60 ft. long by 27 ft. wide. It is so arranged that it can be divided, so as to allow of four class-rooms, two at each end. The building has been erected by Mr. S. Ridehalgh, Mr. Joseph Hawk-

yard having done the woodwork, Mr. R. Brook the plastering, Mr. Aspinall the plumbing, and Mr. Edmunds, of Halifax, the hot-water apparatus. The total cost of the new building will be about 600*l*.

Blackburn.—The foundation stone of new schools for the Holy Trinity parish was laid on Saturday last, by Mr. Edward Kenworthy Hornby, M.P. The building is after the Early English, or Lancet, style, and will be of stone. Mr. James Bertwistle, of Blackburn, is the architect.

PROVINCIAL NEWS.

Halifax.—There is now in course of erection, upon a portion of the Stannary estate, a building for the use of the Dean Clough Library and its kindred institutions, the cost, according to the *Halifax Guardian*, being defrayed by the Crossley Company, Limited. The building, which stands opposite the old hall, has one front leading into the street leading to the hall, and another into Smith-street. It is in the Gothic style of architecture, freely treated. The façade to Smith-street presents, in the first story, eight two-light windows, with pointed ends. At the upper end is a flight of steps to lead to the large room in the second story, which is in course of formation. A dwelling-house is at the lower end of the building near Stannary. The other façade, fronting the hall, has seven windows similarly treated to the others, and a deeply-moulded doorway leading to the large room on the first floor. This room will be of good proportions, and is divided down the centre by a row of iron columns. When completed, the new building will be an ornament to the locality, and of great advantage to the societies for which it is built. On the rising ground on the same estate, and on a line with the room above alluded to, the Messrs. Crossley are erecting a large block of dwelling-houses for the foremen at the works. The houses form a block, in the Domestic Gothic style. —— Workmen have commenced excavating the foundation of a new building which is to serve as a County-court and Bankruptcy court for Halifax. It stands on a site in the Clare Hall estate, between the recently-constructed upper portion of Prescott-street and St. John's-lane, the principal elevation being towards the cross street which joins these streets. At first sufficient ground was purchased for all the offices required, to be on one floor, and a design was prepared by Mr. Sowerby, of London, Government architect. But the authorities did not consent to that, and the site was reduced to one-half, and the building is to be in two stories. It is to be in the Italian style of architecture, and the entrance for the public, and the private entrance for the judge and registrars, will be from the new street. All the requisite offices for the high bailiff, clerks, and other officials, will be on the first floor. A broad staircase will lead to the court, which will be 50 ft. long, lofty, and well ventilated. There will be retiring-rooms for the judge, the registrars, and for counsel and attorneys. Two retiring-rooms will also be provided for the public; one for males, the other for females. There will also be a room for witnesses. Mr. Charnock is the builder.

West Bromwich.—At a recent meeting of the local commissioners, with reference to the proposed new public buildings, the General Purposes Committee reported that they had accepted the offer of the land on the lodge estate, as the proposed site for the market-hall, town-hall, and public baths, and had arranged for the agreement to be sent to the clerk as early as possible. That purchase made a total number of 7,555 yards. The committee found that to carry out the market-hall in all its completeness, it would be desirable to possess the adjoining land belonging to Mr. Prince, containing 1,509 yards, and they proposed to include that in the two acres which the Board had authorised them to purchase. Mr. Prince was willing to sell that land at 4*s*. 3*d*. per yard, and the committee asked for authority to accept the offer. The possession of that land will enable the market hall to be constructed in the form of a cross, its main front and entrance being in High-street, while the two wings will extend as arcades right and left to Lodge-road and Lombard-street. In view of the requirements of the future, the reasonable price at which the land was offered, and its increasing value in the market, the committee urged the Board to make the additional purchase, which would make the whole consist of 9,064 yards, at a cost of 2,400*l*. The following resolution was carried unanimously:—

"That the action of the General Purposes Committee, respecting Mr. Prince's land, be approved and adopted, and that the General Purposes Committee be instructed forthwith to complete such purchase, and be requested to prepare a general specification of the proposed buildings, including an approximate estimate of their cost, the mode of repayment of the loans necessary to carry out the work, and the general conditions on which it is proposed to invite competitors."

VARIORUM.

Some of the journals have mentioned that Mr. J. R. Planché is writing a poem on the Siege of Calais by Edward III. Mr. Planché, however, does not call it a poem, but a romance in rhyme. The work is completed, and now only lacks a publisher, which one may suppose will soon be forthcoming. We have read part of it in MS., and found the story particularly interesting,—the writing, as a matter of course, bright and elegant.——Mr. Edmund Sharpe has reprinted in pamphlet form, "Four Letters on Colour in Churches, on Walls and in Windows" (Spon & Co., Charing-cross), recently addressed by him to the *Builder*. Mr. Sharpe has several books in the press, including an illustrated Account of his Recent Archæological Tour amongst Lincolnshire Churches, and an elaborate work on the Ornament of the Transition Period.——Lovers of pottery and porcelain and their history, will be glad to hear that Mr. William Chaffers is engaged upon a work entitled "The Keramic Gallery," which will include 600 illustrations of rare and choice examples. The first part will appear, through Messrs. Chapman & Hall, next January.——The last published number (123) of "Proceedings of the Royal Society," which, by the way, is a model of its kind for promptness and good editing, includes an account of an elaborate series of "Experiments on the Action of Red Bordeaux Wine (Claret) on the Human Body," by Dr. E. A. Parkes, professor of Hygiene, in the Army Medical School, and Count Cyprian Wollowicz, M.D. We are bound to say that we find ourselves unable to deduce any particularly valuable results from the experiments, but more acute physiologists, doubtless, will do so.——Messrs. Thos. De la Rue & Co. have issued as usual a series of their "Red Letter Diary and Memorandum Book," in dainty shape for the ladies, shrined in Russia leather and satin, and in robuster case for the ruder sex, all, however, what may be termed, in the slang of the day, "good form."——No. 3 of the *Illustrated Review* is an advance on the previous numbers. If the work maintain this standard, it ought to obtain a circulation. The writer of an appreciative notice of Thomas Carlyle, the first article in the number, in setting forth Carlyle's works, oddly enough omits to mention his History of the French Revolution.——The "Belgravia Annual," edited by Miss Braddon, contains a number of stories and engraved illustrations, of more than average merit.——"Our Food: a useful Book for Boys and Girls. By Ellis A. Davidson. Cassell, Petter, & Galpin, London and New York." This little work follows out the course commenced by "Our Bodies," and two or three others; and it gives some elementary lessons in domestic economy. The instruction is to a certain extent technical. Some elementary lessons are given on the proper combinations and uses of the different kinds of food, intended chiefly for girls.——"The Eighteenth Annual Report to the Council of the City of Manchester on the Working of the Public Free Libraries, 1869-70. Manchester: Tubbs & Brook." During the past year the Manchester Free Libraries have been used by about 2,172,046 readers, of whom 412,489 have borrowed books to read at home; 73,799 are readers in the reference library, for the purpose of study and research; 103,077 are readers of books in the branch reading-rooms, and about 1,607,190 have availed themselves of the public news-rooms. The numbers include about 126,061 female readers, of whom 111,369 are borrowers, and about 14,692 are readers in the reading-rooms. The total number of volumes on the shelves is now 100,936, against 92,355 at the date of the last report. The number of volumes called for during the year has increased from 893,648 to 914,888; consisting of 477,544 vols. taken home by borrowers; 110,996 vols. issued for use in the branch reading-rooms; 115,388 vols. issued in the reference library; and 192,007 specifications of patents. As compared with the number of hours the libraries were open during the year, this large amount of issues represents an average of 260 vols. issued per hour, or 4⅓ vols. per minute. Practically, however, the largest demand takes place every day during certain hours, and it is found that the greatest number of issues during any of the busiest hours reaches the rate of about 1,000 vols. per hour, or 17 per minute! The largest proportion of the comparative increase is found to have been as follows:—8·56 per cent. in the class of science and art; 8·48 per cent. in the class of politics and commerce; 4·57 per cent. in the class of theology and philosophy; and 3·84 per cent. in the class of literature, poetry, and works of fiction.——The *Academy* tells us that Mr. C. Hemans's third volume in continuation of his "Christianity and Ancient Art, and Christianity and Mediæval Art," is completed, and will be published in the spring. It will be more generally interesting than the preceding volumes, on account of recent occurrences in Rome.

Miscellanea.

Extensive Canal Scheme in the South of England.—A scheme for shortening the sea passage between the Bristol and English Channels by the construction of a great western maritime ship canal across the counties of Somerset and Devon has, it is said, been so far approved by practical men that it is expected to be almost immediately brought before the public in a matured state. The length of this canal is to be fifty-nine miles, its width at surface 124 ft., and at bottom 31 ft., and the depth 21 ft. This would enable all vessels of moderate draught to pass through from sea to sea. The canal, it is considered, would be of immense advantage for coal traffic from Wales.

Society of Arts.—The opening meeting of the 117th session of this society was held on Wednesday evening last, at the Society's House, and Lord H. G. Lennox, M.P. (the chairman of he council), delivered the opening address.

Roman Catholic Church-building at Dunedin, Otago, New Zealand.—An establishment called St. Joseph's Conventual Church, which is intended to partake of a monastic character, requiring to be enlarged, plans were prepared by Mr. John Millar, of Dunedin, architect. The present church will form the eastern nave, 65 ft. by 30 ft.; and there will be new north and south transepts, 85 ft. by 30 ft.; chancel, entirely devoted to the clergy, 25 ft. by 30 ft., continued westward, enclosing a sacristy, or priests' robing-room, 20 ft. by 12 ft., constructed upon the same level as the chancel. Internally, as well as externally, the church is cruciform. The extreme length of the main axis is 150 ft., and the minor axis 100 ft., whilst the extreme height from the ground level to the apex of roof is 40 ft. The exterior elevations are flanked with buttresses, antique mullioned windows, steeply pitched gables, the western one having octagonal turrets, enclosing stairs, ascending to the organ gallery, choristers' gallery, &c. Tenders having been called for, the following were made:—The church, if erected in brick with internal finish in cement, is estimated to cost, by Mr. William Dalziell, 2,700*l*.; Messrs. Wood & Dunn, 2,950*l*.; Messrs. Goodfellow & Hunter, 3,112*l*. If executed in brick, with internal finish in Oamaru stone:—Mr. William Dalziell, 3,000*l*.; Messrs. Wood & Dunn, 3,200*l*.; Messrs. Goodfellow & Hunter, 3,293*l*. If executed in Oamaru stone internally and externally, i.e., the most desirable:—Mr. William Dalziell, 3,400*l*.; Messrs. Wood & Dunn, 3,680*l*.; Messrs. Goodfellow & Hunter, 3,680*l*.

Value of Land at Dundry.—Mr. G. S. Tricks, of the firm of Wm. Tricks, Son, & Wallop, offered for sale by auction, at the White Lion Hotel, Bristol, an estate at Dundry, consisting of 236 acres of arable and pasture land. The estate was first offered in one lot, and, being unsold, was then put up in eleven lots, in accordance with particulars. The following prices were realised:—Lot 1, 12a. 3r. 2p., 930*l*.; lot 2, 24a. 2r. 36p., 1,720*l*.; lot 3, 36a. 2r. 3p., 2,710*l*.; lot 5, 22a. 3r. 26p., 1,500*l*.; lot 6, 8a. 0r. 3p., 560*l*.; lot 7, 36a. 1r. 31p., 2,350*l*.; lot 11, 12a. 1r. 20p., 730*l*. Lots 4, 8, 9, and 10 were bought in. The property was freehold, and land-tax redeemed; and the title of the vendor was a registered one, under the provisions of the 25th & 26th Vic., cap. 53.

Instruction in Science and Art for Women.—The second of the opening course of lectures by Professor Huxley, in the season's programme of "instruction in science and art for women," was delivered in the lecture theatre of the South Kensington Museum, on Saturday morning last, to a numerous class. The elementary programme consists of three parts:—first, the opening course of lectures by Professor Huxley, on "Elementary Physiography;" secondly, a course of lectures, by Professor Guthrie, on "Elementary Physics and Chemistry;" and, thirdly, a course, by Professor Oliver, to "Illustrate the Phenomena of Life, whether physiological or morphological, by means of Botany." These are all morning lectures (eleven o'clock); the elementary course, or courses, being continued every Wednesday and Saturday, and the more advanced every Tuesday and Friday. The advanced course will consist of a series of lectures on physics (heat and light), by Professor Guthrie; and a series, by Professor Huxley, on human physiology. In addition to these morning lectures, there is an afternoon course, on Wednesdays, at half-past two o'clock. Mr. Pauer's first lecture of a course on the Pianoforte treated of instruments used before the invention of the pianoforte. *a*, the Clavicytherium; *b*, the Clavichord; *c*, the Clavicymbalum; *d*, the Virginal; *e*, the Spinet; , the Harpsichord.—The Pianoforte. Its difference from the previous instruments. State of Chamber Music of the Sixteenth and Seventeenth Centuries.—Composers mostly Organists. Chamber Music becoming popular. Its style.

Damage Done at Strasbourg.—A special correspondent of the *Times*, writing from Strasbourg, says:—Some of the claims which have been lodged are interesting, and, as proceeding from competent officials, may be regarded as authentic and legitimate. The architect of the cathedral estimates the damage it has sustained at 1,500,000f., a sum which seems enormous, although the fabric is far more injured than might be concluded from a superficial examination. The fabric of the Bibliothèque is set down at 200,000f.; a valuation of its contents, which, for the history of the province, are simply irreparable, is modestly declined. The Picture Gallery is valued at 250,000f. the edifice, and 426,700f. the contents; the Theatre, 900,000f.; the Palais de Justice, 530,000f.; the Prefecture, 864,000f.; the Hôtel de Ville, 100,000f. The administration of the Quays and Bridges claim 419,387f. The Citadel claim is split up into nearly a hundred distinct reclamations, its church figuring for 45,000f. for the fabric, and 60,000f. for the fittings. The Gasworks, 86,000f.—a modest claim. The gasometers were destroyed, and for three or four weeks to come Strasbourg will continue without gas. The number of houses absolutely destroyed is about 300, but so many have been so greatly shattered internally as to require rebuilding that this is an under-estimate.

Architectural Remains in India.—Mr. J. Burgess, the editor of two albums of architectural remains, chiefly of the temples of the Jainas, or Shrawaks, at Palitana and Girnar, has submitted to the Bombay Government an elaborate report suggesting plans for a thorough survey of the architectural and archæological remains throughout the whole of the central area of India. The lists of remains appended to the memorandum enumerate upwards of 800 temples and other antiquities.

Railway Traffic Returns.—The traffic receipts of the railways in the United Kingdom for the week ending November 11th, 1870, upon a mileage of 13,771, amounted to 813,915*l.*, being equal to 59*l.* 2*s.* per mile. For the corresponding week of last year the receipts were 788,052*l.*, the number of miles open 13,544, or 58*l.* 4*s.* per mile. A comparison of the two weeks shows an increase in the aggregate receipts, of 25,863*l.*, and in the number of miles open, of 227.

The late Lady East as an Artist.—A painted glass window has been placed in the hall of Bourton House, Moreton-in-the-Marsh, in memory of the late Lady East. The window, which, besides twenty panels of painted border, comprises fifteen panels representing the various armorial bearings of Sir James East's family for the last 200 years, was painted by Lady East for the town residence.

Watford Union Chapel.—The hot-water apparatus for warming this chapel was set up by Messrs. J. Jones & Sons, of Bankside.

Wolverhampton.—Two churches, in St. Peter's, Wolverhampton, have been consecrated, the first by the bishop of the diocese, and the second by the Right Rev. Dr. Abraham, late bishop of Wellington, his coadjutor. The names of the churches are St. Andrew's and Christ Church, and both are entirely free. Neither of them is quite complete, and there is about 1,000*l.* of debt upon the existing buildings. The part of St. Peter's parish in which these two churches stand will soon be formed into an ecclesiastical district, under the title of St. Andrew's.

Royal Academy.—A course of lectures "On Architecture" is announced to be delivered by Professor G. G. Scott, R.A., on the 16th of February, 2nd and 16th of March. We are glad to be able to say that Mr. Scott is better than he was. While inspecting works at Chester Cathedral he was seized with illness (an affection of the heart), and was conveyed with difficulty to the Deanery, where he has lain ever since, now nearly a month.

A Carved Casket.—The casket (containing the documents relating to the inauguration of H. R. H. Prince Christian of Schleswig-Holstein, as Lord High Steward of the Borough of New Windsor) was of oak from Windsor Forest, carved by Messrs. Halliday, Brothers, from a design in the style of the Perpendicular Period, by Mr. A. Y. Nutt, of the Office of Works, Windsor Castle.

Jack-of-all-Trades.—Sir: Some of the auctioneers seem bent on doing every one's business as well as their own. Here is an advertisment (with a difference) from a recent number of the *Times*:—

"MESSRS. PHEASANT & CO., auctioneers, estate and house agents, architects, surveyors, and accountants, valuers of timber, agricultural covenants, copyholds for enfranchisement, railway claims, clerical and general dilapidations, and for administration.—Dearside, London."

Y.

Management of London.—Once more the prospect of a municipal government for the metropolis fades away. Mr. Bruce has taken back his implied promise to deal with the subject next session, and Londoners who long for a government must be content to push their expectations forward to 1872.

Liverpool Architectural Society.—The meeting held on the 16th inst. was occupied with a continuation of a paper by Mr. H. H. Statham, jun., titled, "Notes of a Short Tour among the Lincolnshire Churches," adjourned from last meeting. It was illustrated by a number of sketches made by the writer.

Borough Surveyor of Kingston-on-Thames.—The surveyor, Mr. Slagg, has resigned his office. It is understood that he will remain in Kingston for private business. A committee of the Corporation is charged with the election of his successor.

Borough Surveyor, Barrow-in-Furness. Mr. Howard Evans, assistant surveyor to Salford corporation, has been appointed borough surveyor to the corporation of Barrow-in-Furness.

Societies. — The Royal Society and the Society of Antiquaries severally held their first meeting for the session on Thursday evening, the 17th inst.

Institute of British Architects.—At the meeting on Monday next (21st), Mr. B. Ferrey will read a paper "On the West Front of Wells Cathedral."

Society of Painters in Water Colours.—The private view of the Winter Exhibition of sketches and studies is fixed for Saturday, the 26th inst.

TENDERS.

For new sewers, for the Enfield Local Board:—

Pearson	£1,999	0	0
Marshall	1,480	0	0
Semell	1,414	0	0
Haynes	1,400	0	0
Riley	1,363	0	0
Patman	1,293	0	0
Anderson	1,263	0	0
Standen	1,250	0	0
Hayward	1,199	0	0
Simson	1,197	0	0
Carter	1,180	10	0
Kelly	1,180	0	0
Pizzey	1,177	0	0
Hubberd	1,139	0	0
Bayes	1,110	0	0
Bugbird	1,102	1	0

For enlarging factory, Blackfriars-road. Messrs. Tress & Innes, architects:—

Fish	£1,997	0	0
Conder (accepted)	1,555	0	0

For re-building No. 53, Bow-lane. Messrs. Tress & Innes, architects:—

Fish	£1,776	0	0
Macey	1,677	0	0
Browne & Robinson	1,641	0	0
Lawrence & Sons	1,620	0	0
J. & F. Coleman	1,589	0	0
Ramsey (accepted)	1,437	0	0

For the third block of cottages (three in number), for the Bromley Cottage Improvement Company, Limited. Mr. George Truefitt, architect:—

Payne & Balding	£450	0	0
Brown	375	0	0
Jayes (accepted)	339	10	0
Harper & Spooner	275	0	0

For warehouse, Radsworth-street, Baldwin-street, City-road. Mr. John Collier, architect:—

Moore & Grainger (accepted)	£2,042	18	8

For the erection of offices in King-street, Gravesend, for Mr. Francis Southgate. Quantities by Mr. J. Scott. Mr. Thos. Chas. Sorby, architect:—

Gould	£1,249	0	0
Cobham	1,239	0	0
Blake	1,137	10	0
Hill & Sons	1,086	0	0

For completing houses, for Mr. Evans, at Selhurst. Mr. Thos. W. Willis, architect:—

Wren (accepted)	£1,252	0	0

For the erection of four shops and dwelling-house, at Leytonstone, Essex. Messrs. Simon & Archer, architects:—

Scholtes	£1,600	0	0

For drainage works, Deal, Kent. Mr. Edward W. Fry, surveyor. Quantities supplied:—

Neave	£1,275	0	0
W. & G. Deane	1,195	0	0
Woodcock	1,147	0	0
Chamberlain	1,145	0	0
Cottew	1,133	0	0
Mathews	1,121	0	0
Coleman (accepted)	1,121	0	0

For the restoration of Hingham Church, Norfolk. First contract. Mr. James K. Colling, architects:—

Luff	£2,198	0	0
Spaul	1,999	0	0
Brown	1,836	0	0
Hubbard	1,749	0	0
Tooley	1,680	0	0
Cornish & Lacey (accepted)	1,647	0	0

For the United Methodist Free Church and Schools, Wellington-road, Toxteth Park, Liverpool. Mr. W. J. Mason, architect. Quantities by Mr. Northcroft, surveyor:—

Forde	£3,398	5	0
Potter	3,320	0	0
Tomkinson	3,050	0	0
Bateman	2,999	0	0
Cheetham	2,998	0	0
Haigh & Co.	2,997	0	0
Rome	2,964	0	0
Hargreaves & Grindrod	2,955	0	0
Industrial Building Co.	2,930	0	0
Nicholson & Ayre	2,889	0	0
Urmson	2,866	0	0
Bridge (accepted)	2,770	0	0

For the erection of villa residence, at Claughton, Birkenhead. Mr. Lewis Hornblower, architect. Quantities by Mr. George Northcroft, surveyor:—

J. & W. Walker	£4,765	0	0
Nicholson & Ayre	4,694	0	0
Fisher	4,598	0	0
Haigh & Co.	4,533	0	0
Blakeley	4,450	0	0
Industrial Building Co.	4,385	0	0
Urmson	4,275	0	0
Forde (accepted)	4,017	0	0

For the erection of schools, Church-road, Brixton. Mr. Joseph Gale, architect:—

Kirk	£3,594	0	0
Downs	3,493	0	0
Colls	3,424	0	0
Gammon	3,375	0	0
Little	3,293	0	0
Browne & Robinson	3,282	0	0
Henshaw	3,243	0	0
Rider	3,2[illegible]8	0	0
Sewell	3,177	0	0
D. King & Son	3,130	0	0
Shepherd	2,969	0	0

For the restoration of Coningsby Church, Lincolnshire. Messrs. T. C. Hine & Son, architects:—

	Nave & Aisles.	Chancel.
Hodson & Facon	£1,562	£904
Stevenson & Weston	1,417	853
Worth	1,314	993
S. & W. Pattinson	1,343	877
Hasmiss	1,277	926
C. & W. B. Millson	1,174	825
White & Wood	1,109	825
Otter & Binns	1,128	787
Walter & Hensman	1,141	835
Bolton	1,106	739
Thompson	1,066	762
Otter & Elsey	1,115	690
Knight	979	765
Johnson	1,041	710
Young (accepted)	995	645

For making up Osborne-road, for the Acton Local Board:—

Blackmore	£629	0	0
Hare	461	0	0
Pizzey	375	0	0
Chalkers	359	0	0
Porter	350	0	0
Simson	336	0	0
	295	0	0

For additions to workhouse, in Poland-street, Oxford-street, for the guardians of Westminster Union. Mr. Wm. Lee, architect. Quantities supplied by Messrs. Lisdell & Gifford :—

Saul	£15,639	0	0
Foxley	14,960	0	0
Howard	14,850	0	0
Mann	14,585	0	0
Yates	14,548	0	0
Henshaw	14,143	0	0
Crockett	13,960	0	0
Lathey, Bros.	13,923	0	0
Hart	13,850	0	0
Eston & Chapman	13,810	0	0
Nightingale	13,622	0	0
Scrivener & White	13,565	0	0
Higgs	13,541	0	0
Markwick & Thurgood	13,462	0	0
F. & F. J. Wood	13,350	0	0
Wright, Bros., & Goodchild	12,800	0	0
Hill, Keddell, & Waldram*	12,773	0	0

* Accepted.

For building a tower with spire to Wraysbury Church :—

Nightingale	£2,333	0	0
Mole	1,667	0	0
Price	1,665	0	0
Emerson	1,579	0	0
Taylor	1,481	0	0
Woodward	1,420	0	0
Kelly	1,399	0	0
Gibson, Bros.	1,340	0	0
Fassnidge & Son	1,277	0	0
Harley	1,275	0	0
Reavell	1,250	0	0
Wright, Bros., & Goodchild*	950	0	0

* Accepted.

For sewers, &c., at Bow Common, Turner's-road, and Robert-street, for the Vestry of the Hamlet of Mile-end Old Town. Mr. Knight, surveyor :—

Vicards & Care	£1,298	0	0
Still	1,170	0	0
Hare	1,110	14	0
Webster	1,050	0	0
Potter	998	0	0
Morris	995	0	0
Irons	955	0	0
Killingbrook & Radley	899	10	0
Wigmore	897	10	0
Pearson	839	0	0
Hubbard	779	0	0

For house and shop, on the Marquis of Westminster's estate, Oxford-street, for Mr. Linscott. Messrs. Tolley & Dale, architects :—

Ennor	£4,978	0	0
Brass	4,932	0	0
Sewell	4,882	0	0
Howard	4,394	0	0
Conder	4,293	0	0

For house and shop, on the Marquis of Westminster's estate, Oxford-street, for Mr. Wm. Thompson. Messrs. Tolley & Dale, architects :—

Brass	£3,920	0	0
Ennor	3,889	0	0
Sewell	3,752	0	0
Conder	3,686	0	0
Howard	3,556	0	0

TO CORRESPONDENTS.

T. & L.—J. P.—J. & Son.—T. M.—A. R.—G. G.—J. V.—Miss R.—R. W.—P.—J. R. C.—W. F.—Rev. F. B.—G. E.—J. P.—T. M.—C. C. H.—W. M.—T. R.—A. Y. N.—Messrs. T.—W. H. B.—J. K. C.—L. B.—H. J. M.—Mr. Y.—G. & Co.—K. & Son.—E. W. F.—J. R.—T. W.—J. H.—T. G.—H. K. & W.—T. C.—Ratepayer.—P. S.—G. S.—Messrs. C.—J. G.—Effics.—H. W.—R. P.—G. W. B.—E. C.—J. K. (consult an honest private-dealer).—T. W. H. (amounts should be sent).—S. & S. (incomplete information).—H. T. P. (a valuer's licence, Inland Revenue fine, should be taken).—A. G. (next week).—W. R. (next week).

All statements of facts, lists of Tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO SUBSCRIBERS.

The Publisher cannot be responsible for TESTIMONIALS *left at the Office in reply to Advertisements, and strongly recommends that* COPIES ONLY *should be sent.*

Advertisements cannot be received for the current week's issue later than **THREE** *o'clock, p.m., on THURSDAY.*

☞ *NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and* NOT *to the "Publisher."*

SPECIAL NOTICE.

In consequence of the Reduction in the Newspaper Postage, Subscribers within the United Kingdom will be supplied with THE BUILDER *direct from the Office, at the rate of Nineteen Shillings per annum,* PAYABLE IN ADVANCE.

Just Published, price 2s.

THE REPORT of the SEWAGE COMMITTEE of the TOTTENHAM LOCAL BOARD of HEALTH on the DISPOSAL of the SEWAGE of their District.
Edited by T. P. MARSHALL, C.E. Surveyor to the Board.
E. & F. N. SPON, 48, Charing-cross.

SOCIETY of ANTIQUARIES of LONDON.—VETUSTA MONUMENTA.
The following portions of Vol. VI. are now published, and may be had at the Society's Apartments at Somerset House, or through any Bookseller :—
1. Three Plates of the CHAIR of St. PETER, preserved at Rome; with Letterpress by the late A. ASHPITEL, Esq. F.S.A. and A. NESBITT Esq. F.S.A. Fol. 1870. Price 9s. 6d. ; to Fellows, 6s.
2. Four Plates in Chromolithography, reproducing Illuminated Pages of Ancient Irish MSS. with Letterpress by the late Rev. J. H. TODD, D.D. F.S.A. Fol. 1870. Price 16s. ; to Fellows, 10s.

Just published, in one handsome volume, price 23s.

RIDDELL'S CARPENTER, JOINER, STAIR BUILDER, and HAND RAILER. Complete.
"To one and all this work will be found most useful."—*Builder.*
Edinburgh THOMAS C. JACK. London : SIMPKIN & CO.

Bound in cloth, 1s. 6d. or post free for 20 stamps.

STABLES and STABLE FITTINGS.
"Includes a considerable amount of useful information on the subjects of which it treats."—*Builder*, August 27, 1870.
ST. PANCRAS IRON WORK COMPANY, Old Saint Pancras-road, London, N.W.

"WORKING PEOPLE and IMPROVED HOMES."
The new and illustrated edition of "The Dwellings of the Labouring Classes," by HENRY ROBERTS, Esq. F.S.A. (author of "Home Reform," and "The Physical Condition of the Labouring Classes") will be found a summary of the efforts at home and abroad to secure "Healthy Homes" for working men and women.
"A most valuable handbook."—*Builder.*
To be had at the Office of the Society for Improving the Condition of the Labouring Classes, 21, Exeter Hall, Strand. Price 7s. Also Designs for Cottages, numbered on sheet, with Specifications, &c.

By THOMAS MORRIS, Architect.
With Designs for Villas, Parsonages, and Country-houses.
A HOUSE for the SUBURBS, Socially and Architecturally sketched. Third edition. 12s. 6d. cloth.
PERSPECTIVE or GRAPHIC PROJECTION, Parallel, Diagonal Fan-angular, Graceful. 3s. 6d.
HANDBOOK for VALUERS, CLAIMANTS, MANAGERS, and VENDORS.
A CLUE to RAILWAY and OTHER COMPENSATION for PROPERTY and PERSON. 4s. 6d.
DILAPIDATIONS ECCLESIASTICAL and GENERAL 4s.
SIMPKIN, MARSHALL, & CO. ; and (post only) the Author, 12, Regent-street, S.W.

TO ARCHITECTS.—DESIGNS for new CHURCHES or CHAPELS, Episcopal or Nonconformist, or Engravings of Buildings recently erected, CAN BE INSERTED in the "BAPTIST HANDBOOK," the Annual of the Baptists.—For terms, apply to YATES & ALEXANDER, Symond's Inn, Chancery-lane, W.C.

PERFECTION in BOOKKEEPING.—BUILDERS and Others desiring a really good system, can have a SET of MODELS for BUILDERS' BOOKS, by DOUBLE ENTRY, to which was awarded the prize offered in "The Builder," No. 1,150, and which has been adopted by many large firms. Also a Modified Arrangement by Single Entry, suitable for small builders.—Address, E. A. 4, St. George's-road, Regent's Park, London.

NO MORE LEAKAGE in GLASS ROOFS.—WANTED, TEMPORARY ASSISTANCE to enable the Advertiser to pay the preliminary fees for securing an INVENTION to prevent the water coming through the laps of glass in skylights, or glass roofs, rendering it impossible, at the same time hiding the joint on the inside. The cost will not exceed 1d. per foot super. more than the ordinary lights, and can be made either in wood or metal. The advertiser is willing to deposit the letters patent as security, and to equally share the profits.—Address, J. E. 90, Brecknock-road, Camden-road.

PARTNERSHIP.—A Gentleman educated for the profession desires to PURCHASE a PARTNERSHIP with an ARCHITECT in good practice, who contemplates retiring after a few years.—Address, X. Y. Post-office, Carlisle.

CLERK of WORKS WANTED.—KIDDERMINSTER LOCAL BOARD.—The Local Board of Kidderminster require the services of an experienced CLERK of WORKS, to act under the direction of their Engineer in superintending the Construction of the Sewerage and Waterworks. Applicants to state their qualification, age, and amount of remuneration expected, and give references, and forward them, under cover, to the Clerk to the Local Board of Kidderminster, addressed to the Chairman of the Public Works Committee, endorsed "Application for Situation of Clerk of Works." The application to be sent in on or before MONDAY, the 29th inst.
Dated 16th November, 1870.
JAMES MORTON, Clerk to the Local Board.
Persons canvassing will not be eligible.

GAS and WATER MANAGER.—The Widnes Local Board require the SERVICES of a Person thoroughly capable of undertaking the MANAGEMENT of their GASWORKS and WATERWORKS. The person appointed will be required to devote his whole time to the service of the Board. Salary, 180l. per annum.—Applications, accompanied by testimonials, in sealed cover, endorsed "Gas and Water Works Manager," to be forwarded to the Chairman of the Local Board, Widnes, near Warrington, on or before the 10th DECEMBER next.
THOMAS BEASLEY, Low Clerk.
St. Helen's, 10th November, 1870.

WANTED, a GENTLEMAN, to introduce a new STOVE, and obtain orders upon commission. A small salary will be given.—Address, 590, Office of "The Builder."

WANTED, immediately, an ASSISTANT, thoroughly competent to Make Surveys, Take Levels, and has some knowledge of building.—Apply by letter to A. B. C. Post-office, Derby, stating terms and references.

WANTED, by an ARCHITECT and SURVEYOR, of 16 years' experience, EMPLOYMENT for the whole or part of his time.—Address, 642, Office of "The Builder."

WANTED, in a Drawing Office, a practical MAN, who can make drawings and estimates of iron and lead work, and take off quantities. He must be a thoroughly competent man.—Apply to Messrs. WALKER & EMLEY, Neville Iron-works, Newcastle-on-Tyne.

WANTED, a competent SAW-MILL FOREMAN, to manage and work at sawing, planing, and moulding machinery. No one without good experience need apply. State wages required and references to J. W. STANLEY & CO. Timber Merchants, Wisbeach.

WANTED, by a first-rate ARCHITECTURAL DRAUGHTSMAN, a RE-ENGAGEMENT. Can prepare working, detail, competition, and perspective drawings.—Address, No. 580, Office of "The Builder."

TO MASTER PLUMBERS, &c.
WANTED, by a PLUMBER, a SITUATION. Can do plain zinc-work or gasfitting, and willing to fill up time at other branches. Town or country. Good reference.—Address, C. B. 25, King's-cross-road, W.C.

TO ARCHITECTS AND OTHERS.
WANTED by an experienced DRAUGHTSMAN, EMPLOYMENT. Accustomed to prepare finished, working, and detail drawings, to design, &c. and is well up in construction.—address, X. Y. Z. 70, Great Percy-street, Clarmont-square, Pentonville.

TO SMITHS, &c.
WANTED, by a good Workman, a SITUATION as above. Good reference.—Apply to S. C. 42, Nort h-street, Pentonville, N.

TO PLUMBERS AND HOUSE DECORATORS.
WANTED, by a THREE-BRANCH HAND, a constant SITUATION.—Address, R. P. 8, Chapel-place, Great Ilford, Essex.

TO CARPENTERS, &c.
WANTED, by a Young Man, a SITUATION as IMPROVER. Would require but a moderate salary.—Address, W. W. 34, Upper Carlisle-street, Edgware-road, W.

TO TIMBER MERCHANTS OR OTHERS.
WANTED, by a Young Man, a JOB, to Work a Moulding Machine, and Saw-Sharpening Machine. Gets own irons up. Present situation eight years.—Apply, W. D. 24, Payne-street, Islington, London.

TO MASTER BUILDERS AND PLUMBERS.
WANTED, by a Young Man, a Constant SITUATION as PLUMBER, or on a Job. Can do painting or glazing if required, or make himself generally useful. Good references if required.—Address, C. L. Plumber, No. 21, Woodchester-street, Harrow-road, Paddington.

WANTED, by a good PLUMBER, a SITUATION or JOB. Handy at gas and hot-water work. Town or country. Good reference.—Address, W. R. 6, Charles-street, Kensington-square, W.

TO CIVIL ENGINEERS AND SURVEYORS.
WANTED, by a first-class ASSISTANT, who will be shortly disengaged, a RE-ENGAGEMENT. Ten years' practical experience.—Address, F. B. care of Porter, No. 7, Westminster-chambers, Victoria-street.

TO ARCHITECTS.
WANTED, by a first-rate GOTHIC DRAUGHTSMAN, a RE-ENGAGEMENT. Is well up in design and detail, and has a thorough knowledge of perspective. Excellent references.—Address, H. G 30, Clipstone-street, Fitzroy-square, W.

TO BUILDERS, SHOPFITTERS, AND OTHERS.
WANTED, by a steady, energetic Young Man, a Joiner, of good abilities, a SITUATION to a good Shop. Has been used to shop-fitting and jobbing. Can do French polishing. Wages, 24s. A constancy.—Address, A. J. Francis, Post-office, Wandsworth-road.

WANTED, by a practical Man, to LOOK AFTER a BUSINESS in the Building Trade, or any place where trust is required, or to collect rents, or to superintend general repairs, or estimate for work, or willing to assist in the business if required.—Address (by letter), BETA, Post-office, Beckhurst-hill, Essex.

TO PLUMBERS, BUILDERS, AND OTHERS.
WANTED, by a Married Man, EMPLOYMENT as PLUMBER, GASFITTER, and PLAIN ZINC-WORKER. Thoroughly understands pump, bath, and sheet work, repairing, &c. State wages given. Good reference.—Address, PLUMBER, 19, Middway-street, Ball's-pond, Islington, N.

TO ARCHITECTS AND BUILDERS.
WANTED, by a thoroughly practical CLERK of WORKS, a RE-ENGAGEMENT or SITUATION as GENERAL MANAGING FOREMAN. Competent to prepare plans, working and detail drawings, measure up work, and take out quantities.—Address, W. D. 42, Grafton-road, Kentish-town, N.W.

TO BUILDERS AND IRONMONGERS.
WANTED, by a thoroughly practical Workman, EMPLOYMENT, as HOT-WATER, STEAM, GAS, and HOT-AIR APPARATUS FITTER, of any description, for warming buildings. Bar-work, cooking, &c. Day-work or piece, or as an out-door Working Foreman. Well up in taking orders.—C. W. No. 8, Carburton-street, Fitzroy-square, W.

WANTED, EMPLOYMENT, as a good JOBBING PLUMBER, ZINCWORKER, and GASFITTER. Can fill up his time in painting and glazing.—Address, J. R. 6 Ebenezer-place, Blue Anchor-road, Bermondsey.

WANTED, EMPLOYMENT, by a Carpenter and Joiner. Age 37. Used to all classes of work, in town and country. No objection to a factory. Constancy chief object.—Address, CARPENTER, Clara Cottage, Leytonstone, E.

WANTED, EMPLOYMENT, by a respectable YOUNG MAN, aged 24, as PLUMBER, PAINTER, GLAZIER, and PLAIN ZINCWORKER, or as a General Hand in Jobbing Work. Is able and willing to make himself generally useful in jobbing work. Wages no object.—Address, R. H. 72, Milton-street, Dorset-square, N.W.

TO BUILDERS AND HOUSE AGENTS.
WANTED, EMPLOYMENT, by an experienced, active Man, aged 32. Used to general alterations and house repairs, or shop, office, or warehouse fitting, &c. ; or as TIMEKEEPER (carpenter and joiner by trade). Very low wages accepted.—Address, L. M. at Mrs. Goulding's, 13, Fetlgate-street, Whitechapel, E.

TO BELLHANGERS, GASFITTERS, &c.
WANTED, a SITUATION, by a Young Man in the above line, in town or country.—Address, J. WOODWARD, 4, New-end, Hampstead.

WANTED, a SITUATION, by a Young MAN, as GRAINER and MARBLER, or GENERAL HAND in a Jobbing Shop. Town or country.—Address, A. W. Bart's Coffee-house, 291, Euston-road.

TO BUILDERS.
WANTED, a SITUATION, as WORKING FOREMAN, by an experienced Man in stairs, shop-fronts, sashes and frames, boxing shutters, and the general work of a building. Has been accustomed to machinery. Can work a general joiner if required.—Address, SMITHLY, 19, New-street, Kensington Park-road.

TO BUILDERS, PLUMBERS, AND DECORATORS.
WANTED, a SITUATION, by a steady, sober Man, as a thoroughly good practical PLUMBER, PAINTER, LEAD or SASH GLAZIER, in all its branches. Is a good grainer and decorator. Patterns of graining can be seen, if required. Good reference given. Wages moderate.—Address, W. X. 14, Richmond-street, Maida-hill.

TO MASONS.

WANTED, an ENGAGEMENT, as IMPROVER. Was in last situation four years. Good reference given. Wages 24s. per week.—Address, W. J. S. 22, Aldenham-street, St. Pancras-road, N.W.

TO ARCHITECTS.

WANTED, an ENGAGEMENT, as ASSISTANT. Accustomed to prepare finished, working, and detail drawings, specifications, to design, survey, &c. Is well up in construction, and has had the management of an office for some time.—Address, ARCHITECT, Mr. Robertson, 95, Upper-street, Islington.

TO BUILDERS, &c.

WANTED, a RE-ENGAGEMENT as CLERK, &c. Aged 22.—Address, No. 578, Office of "The Builder."

TO ARCHITECTS AND SURVEYORS.

WANTED, a RE-ENGAGEMENT, by a good GENERAL ASSISTANT. Good references.—Address, F. E. T. 48, Foley-street, W.

WANTED, a RE-ENGAGEMENT, by a thoroughly practical GENERAL OUT-DOOR FOREMAN. Carpenter and joiner by trade. First-class references.—Address, 598, Office of "The Builder."

WANTED, a RE-ENGAGEMENT, as GENERAL or WORKING FOREMAN of CARPENTERS and JOINERS. Good references as to ability. Age 33. No objection to the country.—Address, N. J. 24, Grange-terrace, Blue Anchor-road, Bermondsey.

TO ARCHITECTS, SURVEYORS, AND BUILDERS.

WANTED, an ENGAGEMENT, temporary, or three or four days a week, in town or country, by a first-class Quantity Taker, Measurer, and Draughtsman. Aged 30. First-class testimonials. Terms, 12s. 6d. per day.—Address, A. B. Z. News-rooms, 24, King William-street, Strand.

TO ARCHITECTS.

WANTED, a RE-ENGAGEMENT, as JUNIOR ASSISTANT, by a neat and efficient DRAUGHTSMAN, who has had four years' experience, and is well up in the general routine of an office. Excellent references, &c.—Address, A. Y. Z. 9, Crawford-street, Camberwell.

TO BUILDERS, CONTRACTORS, AND DECORATORS.

WANTED, an ENGAGEMENT, by an energetic Young Man, as GENERAL ASSISTANT, PRIME COST CLERK. Used to measuring, keeping time, and charge of men and works, at home or abroad. Has a practical knowledge of every branch of the trade. Aged 22. Salary moderate.—Address, W. Y. 1, Stamford-street, Kingsland, N.

TO BUILDERS AND OTHERS.

WANTED, by a thoroughly efficient and energetic Shop Foreman of Joiners, a RE-ENGAGEMENT, either as SHOP or GENERAL FOREMAN. Is a good draughtsman, also accustomed to machinery. Aged 42.—Address, T. E. 30, Sussex-street, Warwick-square, Pimlico.

WANTED, by the Advertiser, a SITUATION, in a Builder's Office. Competent to measure work, estimate, &c.; or as Clerk in a Brick, Lime, or Stone Merchant's Office.—Address, 612, Office of "The Builder."

TO ARCHITECTS, &c.

WANTED, by the Advertiser (a neat and quick DRAUGHTSMAN, of upwards of five years' experience), a RE-ENGAGEMENT in an Architect's office.—Address, W. D. care of Mr. Durham, 103, Manor-street, Chelsea, S.W.

WANTED, by the Advertiser, aged 31, an ENGAGEMENT with a Builder. Well conversant with the details of the business, and good accountant. Has a connexion, which might be made mutually advantageous.—Address, B. Y. care of Thomas Fleming, Esq. 7, Denbigh-place, S.W.

TO LIME MERCHANTS, WHARFINGERS, AND OTHERS.

WANTED, by the Advertiser, a SITUATION as CLERK. Has had experience, having been wharf clerk at a lime, cement, brick, and drain-pipe wharf in London. Can produce good references. Aged 27.—Address, H. F. Wharf, Wendover, Bucks.

TO ARCHITECTS AND BUILDERS.

WANTED, by the Advertiser (aged 30), a SITUATION as CLERK of WORKS or FOREMAN. Has a thorough knowledge of the various branches of the business. Eight years' reference, personal, in London, if required.—Address, M. A. 70, Buckingham-road, De Beauvoir-town, N.

TO BUILDERS, PLUMBERS, ESTATE AGENTS, &c.

WANTED, by the Advertiser, a SITUATION, in town or country, as practical PLUMBER, GASFITTER, BATH and HOT-WATER FITTER, in all its branches. Good references.—Address, A. LISTER, Plumber, 3, Artichoke-place, Church-street, Camberwell.

TO NOBLEMEN, GENTLEMEN, MASTER BUILDERS, PLUMBERS, PAINTERS, GLAZIERS, &c.

WANTED, by the Advertiser, a SITUATION, as THREE-BRANCH HAND. Can do gas fitting and zinc-work, paperhanging and distempering; understands country wel-work and lead glazing. A total abstainer.—Address, 601, Office of "The Builder."

AN experienced THREE-BRANCH HAND (Plumber, Painter, and Glazier) is in WANT of a SITUATION.—Address, PLUMBER, 34, Raphael-street, Knightsbridge.

TO PLUMBERS AND BUILDERS.

A GOOD PLUMBER is in WANT of a SITUATION or JOB. No objection to the country.—Address, A. B. 10, The Terrace, Kensington, W.

A STAIRCASE and HANDRAIL HAND WANTS EMPLOYMENT, by day or piece. No objection to joiner's work. Town or country.—Address, R. C. Goding-street, Vauxhall-gardens.

TO BUILDERS, DECORATORS, &c.

A SITUATION WANTED, by a practical PAINTER. First-class pencil hand. Can also do graining, paperhanging, and measuring of painters' work.—Address, D. G. care of Mr. Gilles, 59, Roxburgh-street, Greenock.

A REALLY practical Man WANTS a RE-ENGAGEMENT as FOREMAN or CLERK. Has just finished some large jobs. Can prepare a set of plans, take out quantities, &c.—Address, CARPENTER, Mr. Geoffery's, 2, Pidgeon-yard, Bitton-road, Stratford, E.

TO BUILDERS, PLUMBERS, &c.

A YOUNG MAN, aged 25, whose last employer has retired from business, requires a SITUATION as BOOK, TILE, or STORE KEEPER. Is a practical plumber, and possesses certificates of the Society of Arts and Government classes. Excellent references.—Address, G. L. care of Mrs. Hart, Bury St. Edmunds.

A CLERK of WORKS desires an ENGAGEMENT. Excellent testimonials and references.—Address, No. 640, Office of "The Builder."

TO ARCHITECTS AND SURVEYORS.

AN experienced MANAGING ASSISTANT desires a RE-ENGAGEMENT, temporary or otherwise. Address, A. X. Y. Post-office, 116, Camden-road, N.W.

AN ARCHITECTURAL DRAUGHTSMAN offers his SERVICES in making perspective, detail, and working drawings, &c. Terms moderate.—Address, G. L. care of Mr. Ingram, 33, King-street, S.W.

AN ARCHITECTURAL DRAUGHTSMAN, well up in Gothic and other contract and working drawings, desires a RE-ENGAGEMENT. Good reference.—Address, DEL, 55, Conduit-street, Leicester.

AN Architectural DRAUGHTSMAN is DISENGAGED. Perspectives, competition, and working drawings and details. First-class references in London and country. England or abroad.—Address, J. R. E. Rhodes House, Cheetham-hill, Manchester.

TO ARCHITECTS, SURVEYORS, AND OTHERS.

A FIRST-CLASS DRAUGHTSMAN and GENERAL ASSISTANT desires a RE-ENGAGEMENT in a London Office. Temporary or otherwise. Terms moderate.—Address, A. C. 1, Dunlace-road, Lower Clapton.

TO ARCHITECTS AND SURVEYORS.

A NEAT and expeditious DRAUGHTSMAN requires a RE-ENGAGEMENT in London, permanent or temporary. Design, detail, perspective, and good colourist. Terms, 30s. per week. Unexceptionable references.—Address, E. 9, Alfred-street, St. George's-road, Peckham, S.E.

AN experienced CLERK of WORKS, just completing a job, is desirous of a RE-ENGAGEMENT.—Address, C. J. Mr. Wight's, Hillingdon, Middlesex.

A CLERK of WORKS, thoroughly experienced, desires a RE-ENGAGEMENT. Joiner by trade. First-class testimonials, references, &c.—Address, 573, Office of "The Builder."

TO BUILDERS, CONTRACTORS, &c.

AN experienced BUILDER'S CLERK and ASSISTANT desires a RE-ENGAGEMENT. Used to estimating, measuring, bookkeeping, prime cost, and general jobbing. Unexceptionable references.—Address, S. D. R. Chatteli & Son, Upper Seymour-street, Portman-square, W.

AN experienced BUILDER'S CLERK, qualified in every respect to estimate and measure up works, make out accounts, and well acquainted with the duties of a builder's and contractor's office, requires an ENGAGEMENT. References and testimonials first-class.—Address, G. S. care of Mr. Tyler, No. 259, Queen's-road, Dalston, E.

TO BUILDERS, DECORATORS, AND OTHERS.

A THOROUGH BUILDER'S CLERK desires a RE-ENGAGEMENT. Can measure up, estimate, and keep cost price. 27 years of age, married. Moderate salary. Excellent character.—Address, BUILDER, 20, College place, King's-road, Chelsea, S.W.

TO BUILDERS AND CONTRACTORS.

A THOROUGHLY practical GENERAL FOREMAN requires a RE-ENGAGEMENT, to take the entire charge of a job. Town or country. A Joiner by trade. Good references.—Address, W. 169, Cambridge-street, Pimlico, S.W.

ARCHITECT'S ASSISTANT.—A Gentleman, aged 21, seeks an ENGAGEMENT, as above, at a small salary. Has had seven years' experience in first-class offices.—Address, G. CUTHBERT, Thames Bank House, Mortlake S.W.

AN ARCHITECT and SURVEYOR'S ASSISTANT desires a RE-ENGAGEMENT. Can survey and level. Is competent to prepare complete sets of drawings, with specifications and details, also well up in construction. Good references. Salary moderate.—Address, ARCHITECT, Hartshead, via Normanton, Yorkshire.

TO ENGINEERS AND ARCHITECTS.

AN ASSISTANT, who has had extensive experience in Railway Drainage and Architectural Constructive Works, desires an ENGAGEMENT, temporary or otherwise. Terms not an object. Is an experienced surveyor, and would undertake Parliamentary surveying on very moderate terms. Most satisfactory references offered. Would go abroad.—Address, M. B. 24, King William-street, Strand.

TO ARCHITECTS, &c.

AN ASSISTANT is desirous of an ENGAGEMENT. He is a good Gothic and Italian draughtsman, with a thorough knowledge of perspective, colouring, details, and construction, specimens and reference will best speak as to ability. Terms moderate.—Address, ALPHA, 4, Markham-street, Chelsea.

A CARPENTER and JOINER (member of a Christian church) is very anxious for EMPLOYMENT. Wages not so much an object. Aged 28.—Address, H. H. Boddington's Library, Notting-hill Gate, W.

A CARPENTER and JOINER, well used to Bench Work, and the usual work of a Jobbing Shop, wishes to obtain EMPLOYMENT, in town or country. Constant employment the first consideration.—Address, No. 566, Office of "The Builder."

EMPLOYMENT WANTED, by a JOINER'S MACHINE HAND, to Work a General Joiner, Trying-up Moulding Machines, or Saw Bench.—Address, W. 24, White Hart-street, Kennington Park-road.

TO MANUFACTURERS OF BRICKS, PIPES, TILES, &c.

REQUIRED by a practical Man, a RE-ENGAGMENT as MANAGER. Experienced in erecting works and machinery. Thorough knowledge of the manufacture of fire-bricks, sewage-pipes, building bricks, by hand and machinery, roofing tiles, &c. Highest references and security.—Address, B. Office of "The Builder."

TO BUILDERS.

STAIRCASE and HANDRAIL WORK WANTED, by Piece or otherwise, in Town or country. No objection to joiner's work.—Address, G. F. 13, Palmerston-terrace, Grosvenor Park, Camberwell, London, S.E.

TO BUILDERS AND CONTRACTORS.

THE Advertiser WANTS a SITUATION as TIME and STORE KEEPER, or CLERK. Good references to late employer.—Address, G. N. 14, Clayton-street, Caledonian-road, N.

TEMPORARY ASSISTANCE.—A Surveyor of great experience in Measuring, Estimating, and Quantities, will be glad to give TEMPORARY ASSISTANCE. Has had great practical experience in taking and arranging extras and claims lately. Would undertake the books and accounts of a Builder. Address, SURVEYOR, 11, Duke-street, Portland-place, London, W.

TO BUILDERS, CONTRACTORS, STONE MERCHANTS, &c.—TO BE LET at Camberwell, at Christmas next, a large and commodious WHARF, with two cottages, offices, warehouses, stabling, and large private dock adjoining the Surrey Canal.—Apply at 31, Addington-square, S.E.

ELIGIBLE BUILDING LAND TO BE LET or SOLD, for cottage or villa residences, in several localities within easy distance from London. Also a few SITES for SHOPS and TAVERNS. Advances if required.—Apply to Messrs. KENNARD & BUCK, Architects and Surveyors, 30, Finsbury-circus.

BUILDING LAND.—TO BE LET, by the Leathersellers' Company BUILDING LAND at Forest-hill, within five minutes' walk of the Forest-hill Railway Station. Roads and sewers completed.—For plans and further particulars, apply personally, to Mr. ANDREW WILSON, Surveyor, No. 7, East India Avenue, Leadenhall-street, E.C.

KENSINGTON, HOLLAND PARK.—First-class BUILDING LAND TO BE LET, with the option of purchasing the freehold.—Apply to Messrs. BOLTON & GRYLLS HILL, Solicitors, Elm-court, Temple; R. H. PIERPOINT, Esq. Solicitor, 30, Leicester-square, W.C.; Mr. WM. SIM, Architect, 1, Dane-inn, Strand, W.C.; or Mr. J. BROADBRIDGE, Surveyor, 1, Stanhope-terrace, South Kensington, W.

CRYSTAL PALACE COMPANY. — To BUILDERS and OTHERS.—CRYSTAL PALACE ESTATE.—The Crystal Palace Company are prepared TO LET, on Building Leases, for a term of 99 years, certain portions of their FREEHOLD PROPERTY abutting upon the Penge-road, Thicket-wood-road, Anerley-road, and Palace-road. Plans and conditions may be seen on application to JOHN NORTON, Esq. Architect, 24, Old Bond-street, W.; or to Mr. HART, Accountant, Crystal Palace, Sydenham, S.E.

WANDSWORTH COMMON (BOLINGBROKE GROVE). — TO BE LET, fronting the Common, within ten minutes' walk of the Wandsworth Common Railway Station, and fifteen minutes' from the Clapham Junction Station, FOUR well-roomed HOUSES. Rents 40l. and 50l. per annum. Other houses close by 20l. to 30l. per annum.—Apply to Mr. BHORT, Post-office, New Wandsworth; or of HOOPER, CORPE, & VARLEY, 3, Parkprospect, Queen-street, Westminster, S.W.

CITY OF LONDON.—BUILDING LAND FOR SALE, by TENDER.—The Guardians of the East London Union will meet on WEDNESDAY, the 7th of DECEMBER, 1870, at TWELVE o'clock precisely, at their Board-room, No. 3, Devonshire-square, Bishopsgate, in the said City, to receive TENDERS for a CORNER BUILDING SITE, formerly No. 5, Bomfield-street, Moorfields, near to the Broad-street and Moorgate-street Railway Stations, and containing a superficial area of about 1,500 feet. Sealed Tenders, addressed to the Guardians, must be forwarded, not later than the 5th of DECEMBER next, to the Office of Messrs. A. J. RAYLES & SON, Church-court, Old Jewry, where particulars and conditions of Sale may be obtained. The Guardians do not bind themselves to accept the highest or any Tender.

WATERSIDE PREMISES TO BE LET, on Lease or otherwise, situated in Ravensbourne-street, Greenwich, Kent, having a frontage on Deptford Creek, thoroughly wharfed in, of 92 feet; depth of wharf, 175 feet, and the width of the rear abutting on the New Norman-road, near the London high road, 110 feet. The said premises will be found to be most suitable for the discharge of ships alongside, having an ample depth of water, and they are in all respects well situated and valuable.—Apply at the Office of SMITH, SHEPHERD, & ADAMS, Coal Merchants, Sun-wharf, Church-street, Deptford; or at their Office, New Sun-wharf, Ravensbourne-street, Greenwich.

TO BUILDERS. — TO BE LET, a most eligible PLOT of LAND, a part of the Ashburnham Estate, having about 240 feet frontage in King's-road, opposite St. Mark's College. The plot of ground is inclosed in a ring-fence 8 feet high, and there is a workshop of large dimensions, with general offices, well built, and lighted with sashes and sky-lights. The whole affords every facility for builders. The terms and ground-rents are low. It is within a short distance of Chelsea Station, on the West London Railway, and easy of access to steamboats; omnibuses pass within two minutes' walk every ten minutes.—For terms, apply at the Office, Ashburnham Estate, Chelsea.

TO BUILDERS.—The LEASE (15 years), GOODWILL, and STOCK-IN-TRADE of an old-established BUILDER'S BUSINESS TO BE SOLD. The late proprietor (deceased) had an extensive business in and around the increasing town of Barnet. The premises are well adapted for business, being situate in the centre of the town, and having a good dwelling-house and offices communicating with same.—For terms, apply to Messrs. DUCKWORTH & CLAYDEN, Hadley, Barnet; or Mr. TOWNSEND, Lingfield-road, Wimbledon.

TO BUILDERS, TIMBER MERCHANTS, and OTHERS.—TO BE LET, on LEASE, very extensive PREMISES, situate in Page's Walk, Bermondsey, close to the Bricklayer's Arms Station of the South Eastern, and the Brighton and South Coast Railways, containing an area of nearly Three-quarters of an Acre. The premises consist of the necessary buildings for a large Sawing and Planing Mill, fitted with a 25-horse power condensing steam-engine and two boilers attached, shafting and driving riggers, two self-acting circular saw benches, two deal frames, and a planing machine; stabling for nine horses, counting-houses, two sheds, and in addition thereto a large open space for piling deals or other purposes. The premises are suitable for a builder, timber merchant, or any trade where steam powers and large area are necessary. For a building business these premises are admirably adapted, as there is ample room to erect workshops of large size, and still leave a capacious open yard. The engine and machinery will be let with the premises.—Inquire of FULLER, HORSEY, SON, & CO. Billiter-square, City; or of BARTRAM & CO. Belvedere-road, Lambeth.

FREEHOLD BUILDING LAND TO LET.

TUFNELL PARK WEST, and Estates adjoining, five minutes' walk of two railway stations, improved ground-rents purchased, and materials advanced.

TUFNELL PARK, HIGHGATE.—For houses from 60l. to 70l. per annum.

SYDENHAM.—For houses 25l. per annum. Ground-rent, 3l. 10s. Advances made.

LEE, KENT.—For houses of 20l. per annum. Advances made.

SUTTON.—For houses from 20l. to 140l. per annum. Advances made.

LOUGHTON PARK.—For houses of from 60l. to 70l. per annum.

HARROW.—For houses from 60l. to 100l.

BEXLEY.—For houses from 60l. to 70l. per annum. Advances made.

Apply to Mr. H. A. ALEXANDER, Architect and Surveyor, 16, King William-street, City.

FREEHOLD BUILDING GROUND, ST. PAUL'S CHURCHYARD.—The Commissioners of Sewers of the City of London will meet in the Guildhall of the said City on TUESDAY, the 22nd NOVEMBER next, at HALF-PAST TWELVE o'clock precisely, to receive PROPOSALS for taking on a BUILDING LEASE, for a term of 80 years (the first year at a peppercorn) a PLOT of very valuable FREEHOLD GROUND, commandingly situate at the south-west corner of St. Paul's Churchyard, and known as No. 1, St. Paul's Churchyard, at the corner of Ludgate-hill. Further particulars, with conditions and printed forms of proposal, may be had on application at this Office, where a plan of the ground may also be seen. The Commissioners do not bind themselves to accept the highest or any proposal unless deemed eligible. Persons making proposals must attend personally, or by a duly authorised agent, on the above-mentioned day, at HALF-PAST TWELVE o'clock precisely, and the party whose offer is accepted will be required to execute an agreement and bond at the same time. Proposals, endorsed on the outside "Tender for Ground, St. Paul's Churchyard," must be sent, addressed to the undersigned, before TWELVE o'clock on the said day of treaty.—By order of the Commissioners of Sewers of the City of London,

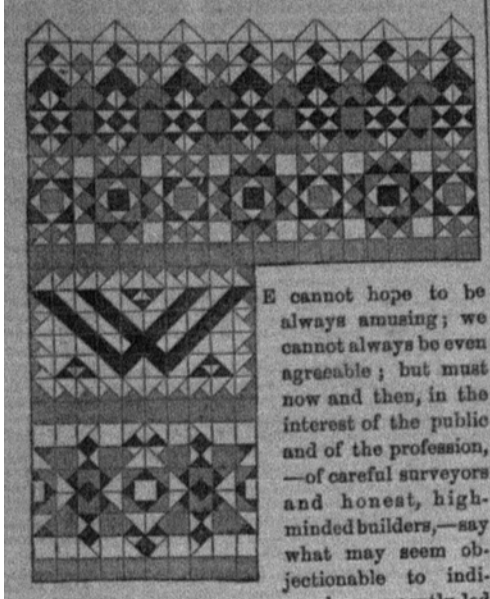
JOSEPH BAW, Principal Clerk.

Sewers Office, Guildhall, 29th September, 1870.

The Builder.

VOL. XXVIII.—No. 1451.

On Several Subjects: Some of them Serious.



E cannot hope to be always amusing; we cannot always be even agreeable; but must now and then, in the interest of the public and of the profession,—of careful surveyors and honest, high-minded builders,—say what may seem objectionable to individuals. Several occurrences have recently led to unpleasant discussions, have brought us many letters, and need further ventilation. Foremost amongst these is what we may call, for a double reason, a "tender" subject. Correspondents urge that a wrong impression has been produced by the paragraph entitled "Erroneous Estimating," which appeared in the *Builder* of the 5th of November inst., and which was subsequently transferred to the columns of many of the daily papers. It has been taken for granted, they complain, that the difference in the tenders for the work specified to be done at Nos. 3 and 5, Buckingham Palace-road (one, the highest, being 2,188*l.*; and the other, the lowest, 800*l.*) was *entirely* owing to the builders themselves, and demur to the remark that as all the builders tendered on the same bill of quantities, this "discreditable difference" must have arisen merely through the prices: they think undeserved obloquy has been attached to the builders in this particular case; and suspect that some one else is to blame besides the builders. One correspondent, signing himself "Audi Alteram Partem," and in whose good faith and accuracy we have reliance, says:—

"I happen to be the surveyor employed by one of the parties tendering for the work to make his estimate for him, and, on looking over the papers put into my hands, I found this paragraph at the end of the stipulations:—

'The bills of quantities are taken out with great care, and are believed to be correct; but of this the contractor must satisfy himself, as neither the proprietors nor the architect will hold themselves responsible for the quantities.'

Acting upon this express instruction to the contractors, I took sundry measurements of the proposed work; but, unfortunately, the bills of quantities had come into my hands so late that I had not time to test all the items, and was obliged to content myself with trying a few of them. The results much surprised me, as you may gather from the following instances:—

1. In the carpenter's bill of quantities, as issued to the contractors, there are the following items:—

Fo. 1.	30 squares.	Firring out to joist to floors.
"	30 squares.	Firring out for ceilings to receive the plasterer's lath.
Fo. 2.	36 squares.	Firring out the old joist above and below, to secure level floors and ceilings.

or 96 squares of firring out altogether; while I cannot make out so many as 40 squares. The basement and the ground floors were to be entirely new, both joists and boards; so no firring out was necessary for either the basement or the shop floor or for the basement ceiling. There, remained, therefore, the shop ceiling, the first-floor ceiling, the bedroom ceiling and the upper bedroom ceiling to be firred out; also the joists of the first floor, the bedroom floor, and the upper bedroom floor,—four ceilings and three floors in all. The measurement of these floors and ceilings is given incidentally in the bills of quantities themselves, the new ground floor being stated to be '5 squares 12 ft. super., 1¼ in. tongued and grooved shop floor.' There ought to have been, therefore, if this measurement be correct, 20 squares 48 ft. of firring out to ceilings, and 15 squares 36 ft. to floors, or 35 squares 84 ft. in the whole, instead of 96 squares, as put in the bill of quantities. How this excess of more than 60 squares, worth from 7*s.* to 8*s.* per square, was obtained I am utterly at a loss to conceive. Some great blunder must surely have unfortunately been made, either in the squaring the dimensions, or in the manuscript, or in the lithography. It is only right to put such a construction upon it until there has been an opportunity for explanation.

2. The second instance (not so astounding as the former), which I shall give is this:—In Folio 1 of the carpenter's bill of quantities, there is an item of '24½ squares of 1¼ yellow batten flooring.' Now, I have already mentioned that the shop or ground floor was to be '1¼ in. tongued and grooved,' and that it measured 5 squares 12 ft., which measurement, I believe, to be sufficiently correct. There would remain, therefore, the basement floor, and the *first*, *second*, and *third* floors, or four floors in all, to have new boards. If the area of one floor be 5 squares 12 ft., how can four such floors measure 24½ squares? Surely four times 5 squares 12 ft. must be 20 squares 48 ft., not 24½ squares as put in the bill of quantities. There might possibly be a few feet more in the upper story, if the walls were half a brick thinner than in the stories underneath, but this would make but a very trifling difference.

3. Folio 2 in plasterer's work shows:—'50 yds. plain cementing to chimneys.' My assistant went on the roof, and could not by any means make 25 yards of this, not even if he reckoned the inside of the parapets as well.

I could mention other items, but your space I fear would be too much occupied. Enough was seen by me to convince me of the propriety of the instruction to the builders, to satisfy themselves as to the quantities, and enough I think has been brought forward by me to show that estimates would be likely to vary in such a case as this. One contractor would go through the whole of the work himself, and form his own conclusions as to quantities; another would go partially into it, as I was compelled to do for want of sufficient time; and others would take the quantities just as they were furnished, and estimate accordingly. My advice to my client under the circumstances was this, to put his estimate in at a prime-cost price, believing there would be a sufficient excess found in the quantities to yield him a profit. To go lower than this I dared not advise him, for I was not sure whether the quantities were to form part of the contract, in which case he might probably be compelled to make an abatement if the quantities were found to be considerab'y less than stated.

I have written this, sir, to mitigate in some degree the effect of the expressions of surprise and censure which have in this case fallen so heavily upon the heads of the unfortunate builders who could so widely differ as do the respective sums of 2,188*l.* and 800*l.* Did this preposterous difference arise, in my opinion, *from difference in price alone*, I should say, let the builders by all means suffer the obloquy which would deservedly attach to so 'discreditable a difference;' but any one may readily see that, if the builders went into the quantities themselves, they did not, in fact, all 'tender on the same bill of quantities,' and may suspect that the differences might probable arise from other circumstances than mere difference of prices.

In conclusion, will you permit me to suggest that more time should be given to contractors to make their estimates than has been customary of late, and that greater facilities should be afforded them to go into the quantities themselves if they desire to do so? The short time given in many cases is indeed preposterous, and is utterly inconsistent with making trustworthy estimates. Another point which I wish to submit to you, as a man of great experience in your profession, is, whether you deem it expedient for architects themselves to take out the quantities of the work which is to be executed under their direction. I have always found that much more satisfaction has been given and confidence expressed when well-known quantity surveyors have been employed for that purpose. I have endeavoured to look most carefully into this case, and I sincerely trust that I have not in any way misunderstood it, and so have unintentionally misrepresented it. If it can be shown that I have done so, I shall be happy to make any suitable apology or retractation; until then I must believe that the builders have had scant justice done to them in this matter; and that, as the accusation against them has been so public and wide-spread, it is only right that any fair defence which can be offered on their behalf should be made equally so."

Most certainly; and we willingly give insertion to these observations. The architect, Mr. Dale, we have no doubt, is quite able, and will be glad of the opportunity to explain the apparent errors.

We printed last week a list of tenders for erecting the tower and spire of Wraysbury Church, under Mr. R. Brandon, architect, which is strangely similar in its terrible diversity to that we have just now mentioned, the highest being 2,323*l.*, the lowest 950*l.*, and both were, as we believe, from very respectable persons. Surely it is the duty of all concerned in these and like cases to endeavour to arrive at the right explanation of such an injurious discrepancy. We have obtained from one of the builders, not amongst the lowest, who tendered for Wraysbury Church tower the following rough abstract of the quantities:—

The works consist of a new tower and spire, and making good to present building.

Cost of material on the site as follows:—Rubble rag per ton, 10*s.*; Hassock ditto, 8*s.*; Bath stone, 1*s.* 6*d.* to 1*s.* 7*d.* per foot cube; bricks, 34*s.* per 1,000.

Quantities as supplied by a London surveyor:—

219 yds. dig, wheel, and cart.
88 yds. concrete.
2 rods of brickwork in cement in underpinning.
389 yds. cube of rag walling.
2,592 ft. facing to ditto.
4,632 ft. cube of Bath stone.
157 ft. cube of Portland and Mansfield
169 ft. super. of 2½ in. rubbed York paving.

The labour on masonry (including waller and bricklayer) amounts to the sum of...	£121	0	0
Material, &c., joiner and carpenter	61	0	0
Plasterer, smith, glazier, and decorator ...	92	0	0
Surveyor's charges.....	51	0	0
Extra scaffolding to spire; inclosing, covering up old building, &c.	150	0	0

We should like to know if all the builders were supplied with quantities from the same surveyor, especially the lowest, and if the above list be similar to their own.

We impute no improper motives in the cases we have commented on; we have not the slightest ground for doing so. We simply seek explanation.

That dishonesty, however, has been elsewhere exhibited we are assured. With reference to some work done last year, for example, a builder informs us, that having gained a contract, the architect who had taken out the quantities informed him, under promise of secresy, that the bills, on which he had made his estimate included 25 rods of brickwork in excess, and requested a participation in the advantage! The writer refuses us the name of the person in question, or we would print it, and take the chance of an action for libel. Moreover, if the delinquent proved to be a member of the Institute (which we do not for a moment believe), we would immediately take steps to obtain his expulsion from that body, regardless of personal consequences.

We have received two additional letters concerning the tenders for the Kensington Workhouse Infirmary. We can find space for only a quotation from one of them. The writer says:—"The surveyors appointed by the guardians, talk in their letter to you (p. 910), about the closeness of the competition for the works. You may not think this so remarkable when I tell you that more than one of the persons who tendered, determined at the last moment not to

price out their quantities, but obtained a sum from one of the other firms, and sent in an offer at something over that. Touching the cost to the parish of taking out these quantities, are you aware that the sums set down in the bills for specific works (for example, allow 986*l.* 10*s.* for service-pipes to cisterns, for water-closets, &c.) amount to 4,400*l.*? So that if only 2 per cent. be charged altogether, and not 3, as 'Ratepayer' asserts, the surveyors get 84*l.* for merely writing down these items."

We cannot just now pursue this part of our subject further.

"Audi Alteram Partem" asks us at the close of the letter we have printed above, whether we "deem it right or expedient for architects themselves to take out the quantities of the work which is to be executed under their direction"? We unhesitatingly answer we do *not* consider it expedient they should do so.

The case of Jones *v.* St. John's College, Oxford, the report of which will be found in our present number, is another warning to builders (if they will but take it) against the reckless folly of signing contracts without having their conditions properly looked into. The counsel for the College argued that "supposing an order for extensive alterations had been given a day or two before the expiration of the time, so that it was physically impossible the work could be completed, the penalties for non-completion could have still been enforced." The judges seem substantially to have agreed in this view of the law, saying, "If persons would bind themselves to absurdities or impossibilities, they must take the consequences. These contracts were often very one-sided, and the builders frequently put themselves absolutely in the power of the employer and his architect; but if they will continue to sign these contracts, such gross folly could not affect the judgment of a Court of Law." The difficulty which builders have found in dealing with such contracts before signature is that not one solicitor in a hundred understands the full bearing of the conditions of building contracts; it requires a very precise technical knowledge and a large experience to see their meaning and extent. Our readers know that the Committee of the London Builders' Society has had under consideration for a long time a set of conditions of contract founded on the agreement with the Council of the Institute of British Architects. The wide publication of these, when thoroughly revised and settled, will assist in bringing about a better state of things.

We print the following, dated from Primrose-hill, in order that we may add a comment:—

"I think it may possibly produce some good effect if I report to you the fact,—discreditable to the district surveyor,—that when my next-door neighbour's chimney was on fire, from deficient sweeping, the fire burned through into this house, destroying the mortar of the party-wall, filling my house with smoke, and compelling me to apply to the fire insurance office, whose workmen are now employed in stripping the wall within my house, and stopping up the holes created by the fire. This fire was no serious matter in itself; it was confined to the chimney, yet so badly constructed are the houses that this work is required.

Not being an architect, nor intimately acquainted with the building trade, this occurrence has induced me to look, as a matter of curiosity, at the new houses in course of erection near me. It is really scandalous that such work should be allowed. If our Building Acts are to secure life and limb, and to prevent the spread of fire, it is truly disgraceful that builders, and architects also, should be allowed to build such houses as I see around me."

We know nothing of the particular case in question, but we undertake to say that many existing houses might be burnt down through the want of the proper parging of the flues, without it being at all "discreditable to the district surveyor." At his visit he urges on the foreman, we will say, the necessity of properly rendering the inside of the flues, and is promised attention. Do all that he can, however, look and inquire as he may as the work goes on, he is in the hands of the bricklayers, to a great extent. It is impossible for him to prevent it from being omitted in parts, if the men are so disposed. Should he discover that a portion is not done, he is told that a boy shall be sent up afterwards. He is told that a boy has been sent up, and that it is all right. In fact, when dealing with scamps, let the district surveyor do what he can, flues may be insufficiently parged. Nor can he prevent bad brickwork generally under similar circumstances. It must be very bad indeed before a magistrate would condemn it, being aware that condemnation might mean the ruin of the speculator, and so thousands of houses pass which the district surveyor knows perfectly well are very badly built, but not badly enough to justify him in going to the police court.

In the case of foundations, too, the Act says the walls are to be built "on solid ground or concrete." The district surveyor may know that the site is unstable, but a layer of concrete has been put into the trenches, sufficient to meet the requirements of the Act, though not to prevent settlements and cracks hereafter, and he also knows it would be useless therefore to take the case before a magistrate. In a word, our correspondent may be right with reference to his particular case, but he may rest assured that a vast deal of bad building is done under the Metropolitan Building Act, without it being "discreditable to the district surveyor."

And now from Builders to Architects' Drawings. When we reported the application for a new trial in the case Ebdy *v.* M'Gowan,* we gave the key-note of the concluding passage. At the trial, Baron Bramwell repeated, with additions, the unsound observations we reported, and the rule was made absolute entitling the Rev. Mr. M'Gowan not to pay Mr. Ebdy for what the latter had done towards the erection of a parsonage-house for him, until Mr. Ebdy had delivered up to him the plans. Baron Bramwell, when the rule was asked for, said,—"If an architect be employed to make plans of a building, and be paid, it seems preposterous, almost childish, to say that he shall retain them." Again,—"The usage set up is impossible, and perfectly suicidal. It only need be stated to show it does not exist. It no sooner comes into existence than it cuts its own throat by its absurdity;" and other nonsense of the kind. It is quite unnecessary to point out to our readers the unsoundness of the Judge's *dictum*. It has been repeated *ad nauseam*, that an architect, except in very special cases, is not employed to make plans, but to produce a building, and that the plans are an accident in the case, the architect's mode of communicating his orders to the workmen, and may or may not be used; may be chalk-lines on a board, or an elaborate water-colour picture. Even in the case that the design is not carried out, the real position is clearly understandable.

If an employer request an architect to prepare drawings for a building for him to be sent abroad, let us say, or to be put into other hands to carry into execution, the architect will assent or refuse, as he please; and if he assent, and hand over the drawings, make such charge as he may have arranged for. But if he be appointed to act as architect for a certain building, and the matter go no further than the preparation of the drawings, being stopped by the act of the employer, there is nothing absurd, nothing preposterous, nothing suicidal in the statement of the usage that the employer should pay, for the time and skill expended, a certain proportion of what would have been the full charge if the design had been carried out; and no injustice whatever in the fact that he has nothing to show for his money; provided, of course, that the stoppage took place through no evil act of the architect. To the question put by one of the Judges at the trial,—"Supposing the architect dies, can his executors keep the plans and yet demand payment for them?" we should say, certainly not. Further, there is the question of courtesy, and willingness to act liberally. Mr. Sydney Smirke, —whose evidence, which materially helped to lead to the present decision, seems to have been misquoted,—writes to us as follows:—

"It would appear by the report of Sittings *in Banco*, Court of Exchequer, Nov. 16 (*in re* Ebdy *v.* M'Gowan), that my evidence has been probably misapprehended, or, at least, obscurely expressed. I beg to subjoin what, to the best of my belief, was exactly the purport of my evidence, and I will add that, after the fullest reconsideration, I retain the opinion expressed.

I stated in my evidence that the custom of the profession has long been, and is, that the architect retains the drawings of a building after its execution, unless under special circumstances or contract; and I gave reasons why such practice is convenient and proper. In reply to the question, What is the custom when the drawings are made, but *not executed* under my superintendence? I stated that I gave up the drawings to my client, if he wished to have them, and charged a commission of 3 per cent. on estimated cost; adding that I did so because I thought it fair that *both* parties should have a *quid pro quo*.

SYDNEY SMIRKE."

The decision has had one serious result already. At the private meeting of the Institute to which we referred recently, held to consider the position of the question concerning the demand of the Board of Works for the drawings for the Houses of Parliament, it was

"*Resolved*—That this meeting adheres to the opinion entertained by a large proportion of the profession, and supported by a mass of evidence as to the practice in all parts of the kingdom on the question raised between Mr. E. M. Barry and the Office of Works, which opinion was embodied in a series of resolutions passed at the special general meeting held on the 9th of May last, maintaining the architect's right of ownership to his drawings, and promising Mr. Barry the support of the Institute.

But, considering that the law officers of the Crown have, in a case submitted to them by the First Commissioner, expressed a contrary view as to the legal aspect of the question, and that the point, if disputed further, would have to be settled at law, the meeting feels that it cannot advise Mr. E. M. Barry personally to contest his right in a hostile manner.

Feeling, therefore, that it would be undesirable for any individual architect to enter into a legal contest with the Government, and observing from the official correspondence now produced, that the First Commissioner is willing that a joint case should be submitted to the law officers of the Crown, and that he undertakes to abide by such decision if Mr. E. M. Barry will do so, this meeting would recommend Mr. Barry to agree to the principle of a reference as disposing of his case."

It was further

"*Resolved*—That, inasmuch as the case of Mr. E. M. Barry now under consideration has exceptional features, this meeting is not prepared to accept the decision concerning it which may be arrived at (by the reference above mentioned) as a rule for general guidance; but would prefer that, at the earliest possible opportunity, a legal decision on a case involving the question of an architect's right of ownership to his drawings should be obtained in one of the superior courts, where evidence as to custom can be produced."

Acting on the advice given, the difference had been brought to the point of arranging an agreement to refer the claim to a retired Judge, when the judgment in Ebdy *v.* McGowan was given. In the face of this judgment, acting under high legal advice, Mr. Barry has withdrawn from the contest, and has told Mr. Ayrton he might have the drawings when he liked. Lawyers say the decision referred to will now be looked on as settling the law, and that no referee would be at liberty to disregard it. We cannot consent, however, that the general question should be considered settled, and trust that before long means will be taken to obtain a legal decision upon a less exceptional case than either of the two we are speaking of.

Leicester-square.—The Metropolitan Board of Works have given notice of their intention of applying in the next session of Parliament for a Bill to enable them to take the garden or inclosure in Leicester-square, to extinguish all existing rights in the same, and to empower them to appropriate and set apart the same for ever as a place of recreation for the public.

* See p. 911, *ante*.

OPENING OF THE NEW PUBLIC BATHS, BRIGHTON.

THE formal opening of baths, the establishment of which has been the subject of much controversy and discussion during several years past, has now taken place.

They are situated at the bottom of North-road, forming part of the old barrack property now in the hands of the Corporation, and are accessible by an iron gateway, through an archway in the buildings, the land for which was not long ago purchased from the town council on lease, opposite Cheltenham-place. They have been constructed by Mr. Blackmore, and Messrs. Reed, engineers, the contractors; the brass-fittings, locks, and other ironmongery having been supplied by Mr. H. Woollett. The main building of the baths is not new, the northern portion of the old Infantry Barracks having been adapted to the purpose; the whole of the interior having been removed and re-constructed for the present purpose. There are two separate entrances to the baths, dividing the women's from the men's, which have no connexion, except at the money-taker's office, which is situated between the two entrance-doors. The first, or northern entrance, leads to the women's baths; on the ground-floor, first and second class, of the former of which there are two, and of the lattter three, with waiting-room outside, the floor of which is covered with kamptulicon. The walls are faced with Minton's tiles, and the wood-work of the baths is of pitch-pine, stained and varnished. There is no difference in the fitting up of the baths themselves, except that the second class are a trifle plainer, although possessing equal comfort and convenience in other respects. The southern entrance leads to the men's baths, which are on the first floor, approached by a flight of oak stairs, the first and second-class baths being separated by a gallery at the top of the staircase. The baths are similarly fitted to those of the women, the difference between the first and second class being in appearance very trifling. There are six first-class and eight second-class on the men's side, each bath-room being about 6 ft. square, and containing a bath 5 ft. in length, made of iron in one piece, and covered with a white enamel which gives them the appearance of porcelain, and possessing the requisite of perfect cleanliness without unnecessary trouble. They are all fitted with apparatus for the supply of cold or hot water in any proportion required, the supply being regulated from the outside by the bath attendant, by means of valves with indicating plates, so as to prevent the possibility of a mistake. The waste pipes from the whole are connected with the common sewer. In each class of baths is fitted a shower-bath, for use as may be required. Each bath-room floor is covered with cement, on which is a carpet and footboard; and all other conveniences have been provided for the use of the bathers. In the rear of the building, on the basement, is the steam boiler, by which the hot water is prepared; and on the ground floor is a commodious washhouse with copper and apparatus for washing and drying the towels.

DUDLEY GALLERY EXHIBITION.

THE committee who manage the exhibition, now held twice in the year, at Egyptian Hall, want a name irrespective of that of the room in which the pictures are shown, and which is not exclusively reserved for them. They should settle this at once. The present collection is scarcely so remarkable as some that have preceded it, but contains a number of good and agreeable pictures worthy of longer notice than the pressure on our space enables us to give. Three pictures by Mr. G. F. Watts, attract attention. The first, which is a design for a larger one of the same subject, he names "Love and Death." A draped figure is pushing open with resistless hand a chamber-door from which Love is coming out. Death, by her vastness, overshadows Love, and seems to render all human interposition useless. It is hazy, but suggestive. His other figure design is a fine monochrome of Francesca and Paolo, as Dante saw them in the Inferno. The pale head that reposes on the bosom of the shrouded lover is sadly sweet. Love defies torment.

Mr. A. B. Donaldson's illustration of the old Venetian legend of the "Return of St. Mark, St. George, and St. Nicholas, the Patron Saints, to Venice" (78), is a meritorious and striking work entitled to careful notice. Miss Ellen Freer gives a new reading of "In Memoriam." A charming young lady, wandering in the woods flower-gathering, comes suddenly upon a tree upon which she perceives certain well-known words cut. She tenderly clasps the tree, and presses her lips to the initials. The glints of light upon the dress are cleverly managed. Our "Country Garden," by Mr. J. C. Lewis, is a blaze of children and flowers. Mr. Elihu Vedder's "Dead Abel" (34) is an impressive picture. The dead body of Abel, lying at the foot of his offering of fruit and flowers, is well posed and modelled, the result of intelligent study. Mr. H. Wallis exhibits a fine picture, "His Highness and his Excellency the Ambassador of the Florentine Republic." "The Art Critic," by Mr. Claude Calthrop, portrays capitally a jester passing his opinions upon a picture-gallery, so as to move the mirth of a fat monk. Mr. Calthrop is making good progress in his art. Mr. Poynter's "Little Girl" (204) and Miss Osborn's "Venetian Water-carrier" (209) are amongst the very good things in the collection.

YOUR NEIGHBOUR'S MUSIC.

A CORRESPONDENT from Whalley Range, Manchester, sends us a lamentable account of the sufferings of some members of his family more than usually nervous, through the pianoforte playing and the singing of his neighbours, and implores us to suggest a remedy. He says, "*Although* the division walls are 9 in., that is, a brick length, and of course plaster, in addition, in thickness, sound can plainly be heard in the room we mostly occupy, the room over, and also in the cellar under. Each note on the piano can be heard quite plainly." Sawdust has been put in at the floor next the wall, the recesses on each side the chimney-breast have been battened and papered, and other expedients tried, but all is of no use. Nor, we are sorry to say, can we suggest anything in reason that would prevent the annoyance. It would, of course, be lessened if his neighbours could be persuaded to remove their pianofortes from the party wall to the other side in each case (he lives in a block of three), and this is what our correspondent should endeavour to bring about.

In stating this gentleman's grievance we express that of thousands, and yet builders in erecting ordinary houses to sell make no endeavour to prevent the nuisance: and little wonder; for if any of them did, they would probably get no more for their houses, or be undersold by less careful competitors. The public may blame themselves.

BUILDERS' CONTRACTS.

JONES *v.* ST. JOHN'S COLLEGE, OXFORD.

THIS was an action in the Court of Queen's Bench, before Mr. Justice Mellor, Mr. Justice Lush, and Mr. Justice Hannen, by a builder, to recover a balance of 990*l.* under a building contract with the College. They set up (except as to 120*l.* paid into court) a cross claim of 870*l.* for penalties, at the rate of 3*l.* a day, under a clause in the contract providing for delay in the completion of the works. The builder to this replied that the delay was occasioned by alterations ordered by the College, which rendered it impossible, as they well knew, to complete the contract and the additional works within the specified time, unless an extension of time were allowed. There was the usual clause in the contract for referring disputes as to time, or quantity, or quality to the architect, who, however, had certified the amount due without any deduction for penalties, which did not appear to have been claimed; and there was a provision for extension of time by him, but there had been no such extension.

Mr. Manisty, Q.C., and Mr. J. O. Griffits were for the plaintiff; and Mr. Kemplay was for the College.

The plaintiff greatly relied upon the recent case of "Westwood *v.* The Secretary of State for India" (cited from 11, *Weekly Reporter*), decided by this Court (Mr. Justice Mellor, Mr. Justice Wightman, and Mr. Justice Crompton) in 1863, and where the Court as to set-off for penalties held that the contractor was not liable, the Indian Government having by their own acts and orders knowingly rendered it impossible for the contractor to do the work within the time. On the other side, the express terms of the contract were relied on, and it was urged that, however hard and unjust it might be, the builder had bound himself by it so strictly that he could not resist the claim for penalties, and it was maintained that the case cited was not precisely applicable, though in the course of the discussion more than one of the learned Judges seemed to think that it was so, but that it was wrongly decided; and in the course of the argument, the counsel for the College being asked by Mr. Justice Mellor whether, supposing they had given an order for extensive alterations a day or two before the expiration of the time, so that it was physically impossible the work could be completed, and they had refused any extension of time, they could have enforced the penalties, he admitted that he was bound to answer, according to this view, that they could not.

In reply, on the part of the plaintiff, it was urged that, as this contention was simply monstrous, it was sufficient to show that the defence set up by the College was as contrary to law as it was to common sense and justice; and that the case of "Westwood *v.* The Secretary of State," was rightly decided, and embodied the sound and just principle of law, based on the acknowledged maxim of law that no one could take advantage of his own wrong or enforce a penalty for a default caused by his own act and conduct.

The Court, at the conclusion of the argument, retired to consider their judgment, and, on their return, proceeded to give judgment in favour of the defendants, the College. The plaintiff, the builder, they said, had expressly contracted to do not only the original, but the additional works within the specified period, unless there was an extension of time, which had not been allowed. It was urged, they said, that this was hard on the contractor, that he should be liable to penalties for works the nature of which he could not have known at the time he entered into the contract. If persons would bind themselves to absurdities or impossibilities, they must take the consequences. No doubt, these contracts were often very one-sided, and one of the parties put himself absolutely in the power of the other. This was in reliance on the reasonableness and fairness on the other side, but that could not affect the judgment of a court of law. The terms of the contract were clear, though its operation might be hard; and it did not appear that, in point of fact, in this case, the extra works were out of the scope of the contract, or had been ordered at such a time as to make their completion impossible. The case cited was distinguishable on the pleadings, as the point in question did not appear precisely to have arisen, though the Court had expressed the opinion mentioned. The judgment of the Court, therefore, must be for the defendants.

BUILDERS' BENEVOLENT INSTITUTION: ELECTION OF PENSIONERS.

THE thirty-fourth election of pensioners in connexion with this charity took place on Thursday last, 24th inst., at Willis's Rooms, King-street, St. James's, Mr. Alfred J. Mansfield, president, in the chair. As we stated in our recent report of the anniversary dinner, there were then forty-four pensioners in receipt of annuities from the Institution, twenty-two men and twenty-two women; the men receiving 24*l.*, and the women 20*l.* per annum each. To this number two pensioners were added by yesterday's election, one male and one female, there being five male and seven female candidates. The male candidates were: William Peters, Benjamin Johnson, Francis Sandon, William Gale, and Mark Mistry. The female candidates were: Harriet Proctor, Mary A. Morgan, Frances Seare, Mary St. George, Jane Brothill, Elizabeth Trevethan, and Alice Hugoe. The Chairman, after expressing his regret that the funds of the Institution at the present time would not permit of the election of more than two out of the twelve candidates, declared the poll to be opened, and it remained open from twelve o'clock till three. At the close of the poll the scrutineers, Messrs. Stirling and Matthew Hall, announced that the successful candidates were Benjamin Johnson and Mary Ann Morgan. It was also stated that the unusually large number of 1,200 votes was left unpolled, the votes recorded being 800 less than at the last election. A vote of thanks to the scrutineers (proposed by Mr. Thomas Smith, and seconded by Mr. John Thorn), and a similar compliment to the Chairman (proposed by Mr. George Plucknett, Treasurer, and seconded by Mr. Joseph Bird), having been unanimously passed, the proceedings terminated.

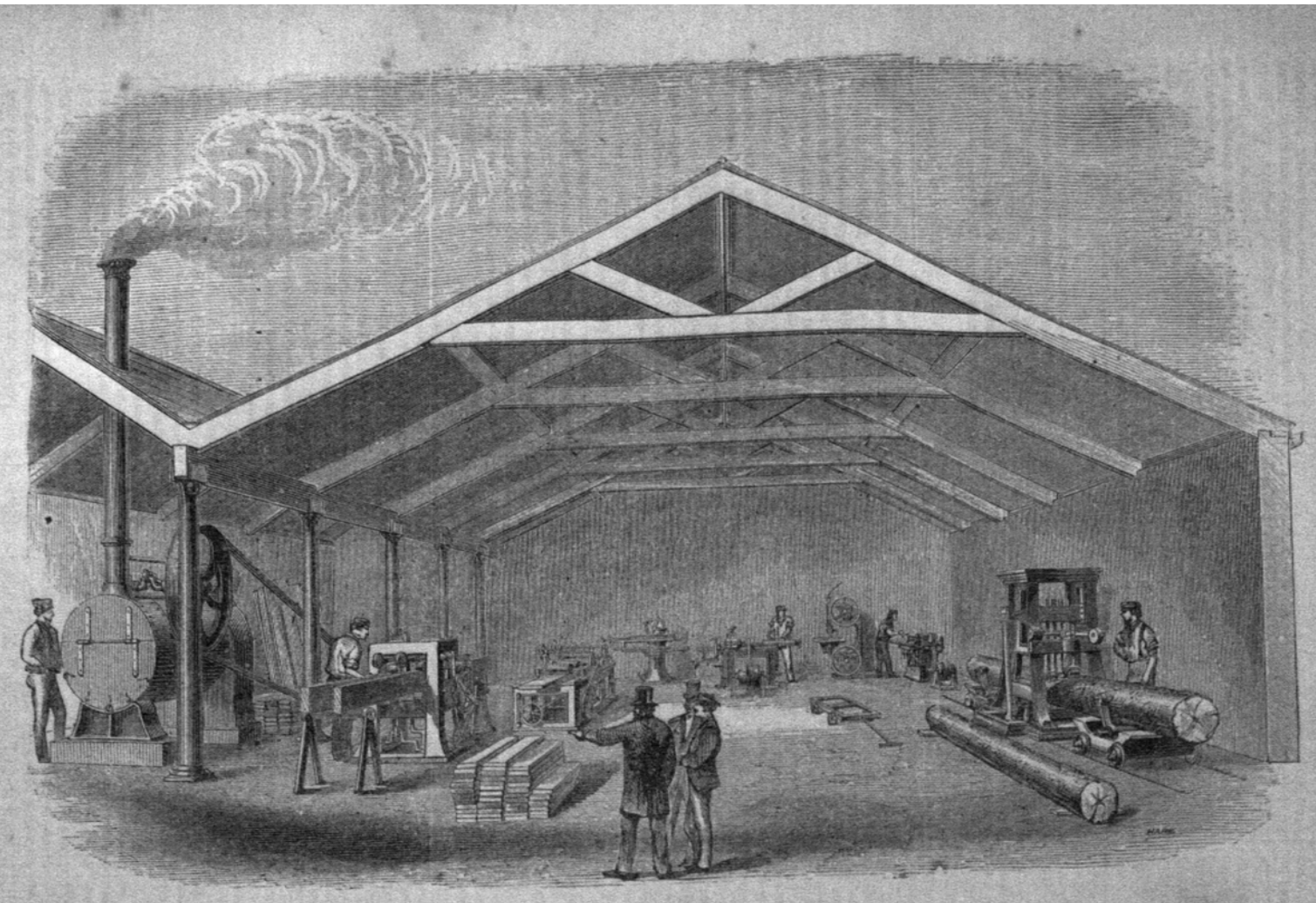
A HOUSE FOR THE LEARNED SOCIETIES.

Thames Embankment Site.—Dr. Guy, in his lecture at the Statistical Society, on the 15th, advocated the claims of the four principal institutions connected with social science,—namely, the Statistical Society, the Institute of Actuaries, the Juridical Society, and the Social Science Association,—to the grant by Government of a site upon the Thames Embankment, a plan for which has been prepared by Mr. Bellamy, and stated that if such a site can be procured a building fund will not fail to be contributed by the members of those four societies.

Victoria-street Site.—A meeting was held on the 2nd of November, at the Rooms of the Statistical Society, at which a scheme, illustrated by drawings by Mr. E. W. C. F. Schmidt, architect, together with a report, was laid before the delegates of the Societies present. This scheme proposes to utilise No. 4, Westminster-chambers, and the vacant ground at the back, to meet the requirements of the societies.

There is evidently a movement in the right direction, but it seems to us to want a good head.

A TRIAL-SHOP FOR MACHINERY IN MOTION.



THIS building has been erected at the works of Messrs. A. Ransome & Co., King's-road, Chelsea, for the twofold purpose of thoroughly testing all new machines as they are from time to time brought out, before sending them away, and also for a show-room, in which intending purchasers can at all times see a selection of the newest and most improved wood-working machines in full operation, and so be enabled to judge for themselves of the merits of the machines before ordering.

From the fact that new machines are being constantly brought out at these works, it results that the selection in the trial-shop is constantly changing; and although some of those which are in general demand are always to be seen working here, yet the chief feature of interest is the exhibition of the various new mechanical appliances and tools, which are tested and perfected in this building before they are brought before the public.

The machines shown in the engraving are of special interest to builders, as they comprise almost everything that is required for preparing joiners' work, from the saw-frame to the lighter machines for tenoning and mortising; and, as they mostly possess some novel features, a brief notice of them may not be deemed uninteresting.

In the front, on the right hand, is a portable combined timber and deal frame for sawing either a log or two deals, as may be desired. The chief novelty in this machine appears to be its great compactness, and the peculiar arrangement of the working parts, whereby the necessity for deep excavations, and the costly foundations which have hitherto been required for machines of this class are dispensed with, and the frame stands upon its own foundation-plate, which is fixed at the floor level upon two stones set in a few courses of brick-work, the only parts of the machine which go below the floor being a portion of the fly-wheel, and the lower part of the swing frame. All the working parts are made of wrought iron, and are as light as possible consistent with sufficient strength. Although the saws make as many as 200 strokes in a minute, there is scarcely any perceptible vibration in the machine.

Opposite to this machine is a small double deal frame, which at first sight appears too small to be capable of sawing anything but battens; but although it stands entirely above the floor, and is only 4 ft. 6 in. high over all, it will saw two deals or planks at a time, up to 11 in. by 3 in., with great speed and precision. The main framing and foundation-plate are cast all in one piece, and the entire machine is so strongly constructed that the saws can be driven at 350 strokes a minute without undue vibration. The deals are fed through the frame by a new arrangement of feed-rollers, which has recently been patented by Messrs. A. Ransome & Co., the improvement consisting in the introduction of three feed-rollers, which are coated with a hard description of india-rubber, which gives a great grip on the surface of the deal and renders any slip impossible. Moreover, being smooth and to a certain extent yielding, the rollers do not mark the deal.

Beyond the deal frame is a new patent planing and moulding machine, which takes in boards up to 12 in. wide and 4 in. thick, and works on all four sides at once. The weak point with machines combining the two operations of planing and moulding has hitherto been that the spindles of the cutter-blocks, if sufficiently strong to work heavy mouldings, are too large to admit of being driven at the very high speed which is necessary to secure perfect work. In the machine under notice, this difficulty is overcome by the introduction of two additional cutter-blocks, one of which acts upon the upper grip on the surface of the deal and renders any slip impossible. Moreover, being smooth and to a certain extent yielding, the rollers do not mark the deal.

Beyond the deal frame is a new patent planing and moulding machine, which takes in boards up to 12 in. wide and 4 in. thick, and works on all four sides at once. The weak point with machines combining the two operations of planing and moulding has hitherto been that the spindles of the cutter-blocks, if sufficiently strong to work heavy mouldings, are too large to admit of being driven at the very high speed which is necessary to secure perfect work. In the machine under notice, this difficulty is overcome by the introduction of two additional cutter-blocks, one of which acts upon the upper and the other upon the under side of the board or moulding. The spindles of these extra cutter-blocks are made of a special quality of cast steel, which is very hard on its surface, but has a soft, tough core or centre: the result is, that great strength is obtained with a small diameter of bearing, and these spindles can be driven nearly double as fast as they could be if made of iron. These extra blocks are armed with light cutters, which finish the moulding after it has been roughed out by the first top and bottom cutters, and being driven at a very high speed, and having nothing to do but skim the surface of the wood, they turn out the wood with a very fine finish, and at a speed unattainable with any machine not possessing this improvement. As the finishing cutters work only in the clean wood which is perfectly free from grit, they will run a long time without getting dull. All the spindles of this machine run in self-lubricating bearings, of considerable length, which enables them to work at high speeds without heating.

On the opposite side of the shop is a special machine for running small mouldings, not exceeding 3 in. wide by 1½ in. thick, which it turns out worked on all four sides with a good finish, at the rate of 40 ft. a minute. As in the machine last described, the spindles are all made of mild centred cast steel, and run in self-lubricating bearings; and, being small in diameter, they admit of being driven at 6,000 revolutions a minute, at which speed, we are told, they run perfectly cool.

In the middle of the shop is one of Messrs. Ransome's patent general joiners, which are now so well known as not to require any notice here, the only new feature in it being an additional arrangement for cutting circular mouldings and for chamfering and shaping straight or irregular-shaped pieces. The band-saw shown at the end of the shop is fitted with an effective arrangement for packing the saw immediately above and below the cut. This is the invention of Mr. Richards, of Philadelphia, and enables the saw to stand a considerable amount of forcing without being unduly strained or buckled. An improved saw-sharpening machine is always kept at work for sharpening both the frame and circular saws used in the various machines.

The whole of the machinery is driven by a new description of portable engine recently brought out by Messrs. Ransomes, Sims, & Head, of Ipswich, with the special object of economising fuel. The boiler, which is unusually large for

its nominal power of 10-horse, is made sufficiently strong to work safely at a pressure of 100 lb. to the square inch, the ordinary working pressure being 80 lb., at which the engine will give out double its nominal power. The fire-box is of large size for burning the chips and shavings made by the machines, instead of coal, and the feed water is heated by the exhaust steam to nearly boiling point before it enters the boiler. The cylinder is provided with a steam-jacket, which is constantly filled with hot steam, and thus prevents any condensation of the steam in the cylinder; and the engine is fitted with an improved variable expansion-gear, by which the amount of steam used can be regulated according to the number of machines at work.

The machines are all substantially fixed, and the shafting runs in a tunnel under the floor; so that the belts are all out of the way. It seems to us that any builder contemplating the erection of machinery could not fail of getting some useful hints from a visit to this place.

THE STUDY OF CHURCH ARCHITECTURE.*

Although this is the second time only that I have attended the meetings of this Association, I cannot say that I have the feeling of being in the presence of strangers. For, in the first place, I see before me the familiar countenances of several of your members, in whose company I spent a very pleasant week at the end of August, amongst the Lincolnshire churches; and, in the second place, I cannot help thinking that you will be disposed to accept me on the footing on which I desire to stand with respect to this Association, namely, as a friend, who having long ago withdrawn from the practice of architecture as a profession, and having therefore no further personal object to serve in this respect, desires to aid the junior members of the profession in the pursuit of a study to which he has devoted a considerable portion of his own life, and on a tolerably complete knowledge of which depends in a great measure their future excellence as professional men; I mean the study of the History of Church Architecture. And here let me guard against the possibility of being misunderstood. When I speak of the study of the History of Church Architecture, I mean the serious study of the progress of a great Art—the art of Building,—during the Middle Ages; and I do not mean that dilettante study of Mediæval art which, mixed up with the examination of barrows and tumuli, the investigation of British earthworks and Roman roads, the rubbing of brasses, and the collection of tiles and pottery, passes under the general term of Archæology; in the pursuit of which Antiquarianism holds the first place, and Art the second in the breast of the student. Nor yet do I mean that attempt to unite ancient art with modern practice in church buildings and church observances, which calls itself and is known as Ecclesiology. The true architectural student has, in fact, a far simpler, and, it appears to me, a far nobler course open to him. He has to trace out and to follow the progress of this great art, by the help of the admirable illustrations of it which remain still in all parts of Christendom.

He has to note the changes of form, in outline, detail, and carved work, through which Mediæval Architecture passed, from its earliest infancy, in the eleventh, to its highest perfection at the close of the thirteenth century, and subsequently declined again from this point to its final extinction in the sixteenth century. He has to mark and to record the indications of this gradual, but regular, constant, and simultaneous, progress, and to turn the lessons which it thus teaches him to his future use and profit. There is no nobler or more interesting study open in the whole range of the history of art and civilisation; and I rejoice in this opportunity of urging a society which has so much energy and vitality in its management, and so many active eyes and hands amongst its working and junior members, and which has now so firm a position and standing in the country, to put itself at the head of a movement, which shall have for its object the extension of elementary knowledge in the subject of church architecture, not only amongst its own members, but as well to those numerous amateurs in all parts of the country whose only means of acquiring any at the present time is limited to the annual meetings of the local societies to which they may happen to belong.

Now I am aware that it has been somewhat the fashion of late in certain quarters to decry this careful and attentive study of our national monuments, and to refer the young architect to his own inspirations, to the light of nature, and so forth, rather than to ancient example. This counsel is very delusive and very mischievous, and can only lead to failure. Every art has its alphabet and its grammar, as well as its language and its poetry; and it would be just as irrational to expect any one to comprehend and appreciate the latter before he had learnt the former as it would be to call on a youth to compose Greek verse before he knew how to read and write the language. No one can possibly design a good Gothic building who has not, by diligent study, become thoroughly imbued with the spirit in which those early masters thought, designed, and built. There is no royal road to success in this direction.

But it has been also urged that the knowledge thus obtained leads to servility, and disposes the student rather to copy than to invent and to design. But how was it with our forefathers,—the men who constructed all these glorious buildings? They were evidently all brought up and carefully trained in one school of art, and had not even the liberty and choice that we have; yet we never find them repeating themselves, or copying their neighbours' designs. Of the thirty churches which we visited in August more than half were built in the same period, and within a few years and a stone's throw of each other; yet there are not two of them the main features of which can be said to be identical, or even greatly similar. The truth is that the saying which applies to the poet, "*Poeta nascitur, non fit*," is true also, in other words, of the architect. It is not the study of excellent work which causes copyism, but the inability to turn the knowledge thus obtained to good account. An inventive and cultivated mind well trained in this noble school of art, and thoroughly imbued with the feelings and spirit which it breathes, should have no greater difficulty in the nineteenth than in the thirteenth century in producing works of merit and originality. But it is in architecture as in everything else; and it is hardly necessary to say that no amount of study will compensate for the want of natural talent and ability.

With these preliminary remarks, I will proceed at once to the matters on which I have undertaken to address you to-night; but here allow me to observe that you will, perhaps, be disposed to think, before I have finished, that the title of the paper, as I sent it to the secretaries, and as it is inserted in the programme, might have been more correctly stated; for although I shall certainly have to explain to you the use I propose to make of colour for the purpose of indicating distinctions of style, I shall have much more to say to you in regard to those distinctions themselves, the perception and appreciation of which are of so much importance to the architectural student. My first business, then, is to point out to you these distinctions. Now, in order to do this, it is absolutely necessary that I should make use of terms by which to characterise them; and, of course, it is very desirable, in doing so, to make use of terms in general use. But it so happens that it is impossible for me to do this, for the simple reason that there are no terms in popular use which are applicable to, at least, two classes of buildings, to which I wish to draw your special attention. I have, therefore, been obliged to invent terms for this purpose. They are contained in a little work which I published some years ago, but which, having been long out of print, is known, I dare say, to few who are present this evening; and to those who do happen to know them I dare say I can make the repetition of them less wearisome by the addition of several particulars which have not yet been published.

Of course, no one who has paid any attention to this subject is ignorant of the fact that it is to Mr. Rickman that we owe the first classification of our national architecture; and that he divided it into four styles, from the Conquest to the Reformation, which he called Norman, Early English, Decorated, and Perpendicular. Now, it is no reflection on Mr. Rickman to say that this division, simple as it is, and well-fitted as it was at the time he wrote, for the purpose for which he intended it, is not adapted to the advanced state of knowledge on the subject which we now possess, and does not answer the purpose of descriptive writers of the present. It does not, for example, make any provision for the two large classes of buildings to which I have already referred: I mean, first, those that were erected during the half-century that intervened between the first appearance of the pointed arch and the final disappearance of the circular arch; and, secondly, those which were constructed during the seventy years that intervened between the first appearance of tracery in windows and its employment in that flowing form which Mr. Rickman instances as the chief characteristic of his Decorated period.

Now, during these two periods of art, some of the most important and interesting buildings in the kingdom were raised,—buildings more characteristically national, perhaps, than those of any other period,—buildings which possess features and peculiarities that enable us to identify and to distinguish them satisfactorily and completely, as well from those which preceded as from those which followed them; but buildings which it is impossible to classify and describe, without circumlocution, by any of the terms which Mr. Rickman has bequeathed to us.

It was to provide a fitting place in our Nomenclature for these two Periods of English Art that I proposed, some years ago, the division of our National Architecture, from the Conquest to the Reformation, into six Periods instead of four, a division which has since then been coming into pretty general use, and which is illustrated in the six diagrams behind me.

Mr. Sharpe then proceeded to explain the characteristic features of these periods, as contained in his work on the Seven Periods of English Architecture;—and which have been more than once stated in detail in the *Builder*. He insisted on the importance of the Transitional Period; on the interest attached to the struggle that was carried on throughout its entire duration between the two forms of arch, and on the employment of the Pointed arch in arches of construction, and of the circular arch in arches of decoration; on the fertility of invention exhibited in the ornamentation of this period, and on the rise of a new school of English Art during this period, completely emancipated from the influence of earlier ideas brought over by Norman architects; and he instanced the large number of important buildings which still remain to us of this period.

Passing rapidly over the Lancet period, he dwelt on the characteristic features of the Geometrical period, in which he asserted that Gothic art attained its highest development in this country; he drew attention to the features which distinguish it as well from the Lancet as from the Curvilinear periods, and referred to the long list of noble buildings which illustrate this graceful period, as well on the Continent as in England; and amongst which he instanced the Presbytery of Lincoln Cathedral as belonging to the highest class of European art, whether as regards its outlines and its main features, or its sculptured details and carved work.

Mr. Sharpe then pointed out the evident decline in all these particulars in the succeeding Curvilinear period, drawing attention to the fact that the point at which this decline commenced may be said to be identical with the introduction of natural foliage into carved work, which took place in the middle of the Geometrical period. He described the unsuitability of the most usual forms of vegetation for the ornamentation of capitals and corbels; and, whilst admitting the excellence to which the builders of the fourteenth century attained in the imitation of the leaves of the vine, the oak, and the maple, pronounced the thin flat forms of these vegetable products to be unfit for solid stone or wood work, except on flat surfaces, and to be capable of being successfully executed only in such materials as bronze, copper, or iron. He remarked also that the mistake was soon discovered, and that before the close of the fourteenth century, conventional foliage having only a certain affinity with real foliage was again in vogue.

He accorded, however, to the Curvilinear period the merit which was due to the invention of flowing tracery, and the excellence of its sculptures; and instanced the Easter sepulchres to be seen in the chancels of Heckington, Hawton, and Navenby Churches, and in the presbytery of Lincoln Cathedral,—all belonging to this period,—as containing, in the figures of the soldiers and angels guarding the tomb, some of the most admirable representations of the human

* By Mr. Edmund Sharpe, from a lecture to the Architectural Association on the 18th inst.

form, and of drapery, to be found in any age or in any country.

Concluding this rapid survey with some remarks on the characteristic features of the work of the Rectilinear period, the lecturer proceeded to show how, in the preparation of the ground plans, sections, and elevations of buildings executed at different times, he proposed by the use of different colours to indicate the periods to which the several works might belong, in the manner which has been already explained in the *Builder*.

But the novelty on this occasion was the exhibition of a large number of diagrams of the arch-mouldings of the pier-arches of the cathedrals and abbey churches of the kingdom, which covered entirely the side walls of the larger of the two exhibition-rooms in Conduit-street, and which, executed in the six colours which Mr. Sharpe has appropriated to the six periods of his division, and arranged in their true chronological order, exhibited in the exact sequence in which these colours occur in the prismatic spectrum, the progress of the art of moulding in stonework from the eleventh to the sixteenth century. The lecturer having explained the manner in which these diagrams were prepared, and the usefulness for this purpose of the little instrument called the cymagraph, of which, although invented by Professor Willis more than twenty years ago, the use at the present day, he believed, was confined to himself and one or two others, proceeded to point out the different characteristics of the moulded work of the different periods, the slow and gradual progress of this transition, the power of fashion over the forms and profiles of these mouldings, and the certainty that it is in this direction that we are to look for the surest indications of the age of a building; and that it would be by no means impossible to be able shortly, by the help of these unfailing records, to determine, within a few years even, the date of a building that was constructed five or six centuries ago.

Mr. Sharpe concluded a lecture which occupied upwards of two hours, and was listened to throughout with the undivided attention of a large and intelligent audience, which completely filled the large room, by urging on the junior members of the profession, to whom he specially addressed himself, not to content themselves, in the pursuit of this study, with the examination and comparison of drawings and engravings, the study of which was, no doubt, at all times, but especially in the first instance, most desirable, but to lose no opportunity of visiting, studying, and making notes of every bit of ancient architecture to which they could obtain access; and expressed the hope, in case health and leisure permitted him, to renew the invitation which he had addressed to the Association last summer, and which had been attended with such pleasant results, and trusted that at least double the number who responded to it on that occasion would be found ready to devote a week next summer to similar researches together amongst an equally interesting group of English churches.

ON THE WEST FRONT OF WELLS CATHEDRAL.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting, on Monday, the 21st inst., Mr. E. I'Anson, Vice-President, in the chair, a paper "On the West Front of Wells Cathedral," by Mr. Benjamin Ferrey, F.S.A., was read. We make some extracts:—

The excessive beauty of the west front of Wells Cathedral, as a whole, is undeniable, and exhibits genius of the highest order. For its purpose of presenting to the religious spectator in a single façade the portraits of triumphant monarchs, saints, and prelates, in one great assembly, the design of the front is unequalled, and small is the deviation from true principles which has been perpetrated for this display. How monotonous would have been the west front of this great cathedral if its treatment had followed the hackneyed rule laid down by the author of the "Norman Conquest." Although ordinary artists may fairly be trammelled by such canons as are well set forth by Pugin and others, there have been, and ever will be, men of such originality of thought that their productions cannot be controlled by every-day rule. Their works are stamped with genius, and no better evidence of this assertion can be met with than will be found by those who care to study both the composition and details of Bishop Jocelyn's great work,—the west front of this cathedral.

The materials of the whole front consist of Doulting stone and blue lias columns, abaci, string-courses and pedestals; but this additional enrichment is carved in white lias, and adds much to the effect of the soffits, though palpably an afterthought.

Another noteworthy characteristic is the selection of the subjects of the sculpture, as pointed out by Professor Cockerell. They are chosen to impress upon the beholder the grand verities of the Christian faith; and there is a total absence of all apocryphal and superstitious subjects. Whether the intention of the sculpture was to express in stone the glorious theme of the Te Deum, as ingeniously suggested, or with whatever meaning they were executed, they are worthy of admiration, and a higher tribute to the excellence of the figures can hardly be adduced than the praise awarded to them by the great Flaxman, whose remarks were as follow:—

"Bishop Jocelyn rebuilt the Cathedral Church of Wells from the pavement, which having lived to finish and dedicate, he died in the year of our Lord 1242. The west front of this church equally testifies the piety and comprehension of the bishop's mind. The sculpture presents the noblest, most useful, and interesting subjects possible to be chosen. On the south side, above the west door, are alto-relievos of the Creation in its different parts, the Deluge, and important acts of the patriarchs. Companions to these are alto-relievos of the principal circumstances of the life of our Saviour. Above these are two rows of statues larger than nature, in niches, of kings, queens, and nobles, patrons of the church, saints, bishops, and other religious, from its first foundation to the reign of Henry III. Near the pediment is our Saviour come to Judgment, attended by angels and the twelve apostles. The upper arches on each side along the west front, and continued in the north and south ends, are occupied by figures rising from their graves, strongly expressing the hope, fear, astonishment, stupefaction, or despair inspired by the presence of the Lord and Judge of the world in that awful moment.

In speaking of the execution of such a work, due regard must be paid to the circumstances under which it was produced, in comparison with those of our own times. There were neither prints nor printed books to assist the artist. The sculptor could not be instructed in anatomy, for there were no anatomists. Some knowledge of optics and a glimmering of perspective were reserved for the researches of so sublime a genius as Roger Bacon some years afterwards. A small knowledge of geometry and mechanics was exclusively confined to two or three learned monks in the whole country, and the principles of those sciences, as applied to the figure and motion of man and inferior animals, were known to none! Therefore, this work is necessarily ill-drawn and deficient in principle, and much of the sculpture is rude and severe, yet in parts there is a beautiful simplicity, an irresistible sentiment, and sometimes a grace exceeding more modern productions.

It is very remarkable that Wells Cathedral was finished in 1242, two years after the birth of Cimabue, the restorer of painting in Italy; and the work was going on at the same time that Nicolo Pisano, the Italian restorer of sculpture, exercised the art in his own country; it was also finished forty-six years before the Cathedral of Amiens, and thirty-six years before the Cathedral of Orvieto was begun, and it seems to be the first specimen of such magnificent and varied sculpture united in a series of sacred history that is to be found in Western Europe. It is therefore probable that the general ideas of the work might be brought from the East by some of the crusaders.

But there are two arguments strongly in favour of the execution being English. The family name of the bishop is English,—'Joceline Troteman,' and the style, both of sculpture and architecture, is wholly different from the tombs of Edward the Confessor* and Henry III.,† which are by Italian artists. There are many compositions of the Almighty creating Eve, by Giotto, Florence; Buon Amico, Buffalmacco, Pisa; Ghiberti, and Michelangelo. This is certainly the oldest, and not inferior to any one of them."

For dignity of expression and posture many of the statues can hardly be surpassed, and the affecting series of groups filling the long range of niches over the west triplet window, illustrating the Resurrection at the last great day, are wonderfully fine, and we can only regret that an imperfect knowledge of anatomy has somewhat marred the treatment of this most solemn representation. Nevertheless, the attitudes and expressions of despair and grief are exemplified in a wonderful manner, and the uplifting and rising from the tombs conceived and carried out in the most masterly way. It must be remarked in reference to these several groups, that they are not sunk or carved out of the solid masonry, but executed in detached blocks and inserted within the niches. Curiously enough, also, each group has an incised number, still distinctly visible, showing the order in which they were to be placed to the south of the façade. The bishops have their mitres and priests their tonsure, though, in other respects, all are entirely naked. Above and around these figures must be noticed the bold and splendidly undercut foliage which fills the spandrels, and, although much is decayed, there yet remains a considerable extent of this fine and effective carving standing out in the most artist-like manner; indeed, throughout the whole of this front, the capitals, bases, and hollow mouldings at the back of each of the insulated shafts exhibit beautiful carving, and present an admirable study for the carver.

Immediately above this Resurrection stage, as it may be termed, which extends not only across the west front proper, but fills also the sides of the two towers, there is a central feature, consisting of nine niches, with well-moulded trefoil heads, resting on as many blue lias columns, and containing what has not inaptly been termed by Professor Cockerell, "The nine orders of the Heavenly Hierarchy," though his supposition can scarcely be borne out now that a close inspection of the statues has been made. The sadly dilapidated condition of these statues is truthfully shown by the series of photographs: they are hopelessly going to ruin, and no effort, I fear, can save them; it is, however, a satisfaction to possess such unquestionable evidence of their condition, and to be able, even in their present imperfect state, to give some idea of their former vigorous outlines. Great difference of opinion prevails as to the course which should be taken with the sculpture, which is so completely crumbling away, that no trace of it will shortly remain. Some are for awaiting this result rather than touch the fragile remains, while others recommend that these figures should be at once removed while there is sufficient indication of their character, and be carefully preserved in the cathedral, and that others, executed by skilful hands, should be placed in the niches—a suggestion not unworthy of consideration.

Above the range of statues comes the tier of twelve niches, containing, beyond doubt, the figures of the twelve Apostles: most of them can be identified by the instruments used in their martyrdom, or by significant emblems. A peculiarity of much beauty, in the arrangement of these niches and canopies, deserves notice. The present dilapidated condition of the canopies and capitals gives the impression that the greater number of the sustaining columns are wanting, and several are gone, but the series of niches is divided into three large bays, containing in each four figures, the group being separated by projecting columns, while the figures themselves are divided by smaller attached columns at the back of each niche, the canopies to the figures projecting in a pendentive manner, and the soffites formed of free and beautiful foliage. This is an unusual treatment, but quite worthy of attention, as showing the happy manner of relieving the monotony of twelve similar niches as usually arranged.* A very imperfect idea can be formed of the beauty of these canopies, as, with the exception of fragments at each end, the weather has completely destroyed the other parts of the twelve canopies. The figures which fill the niches are, I think, unquestionably, of later date than the rest of the statuary, but they are singularly grand and effective works when considered from the distance from which they were to be viewed. Before describing each, I would call attention to the conventional arrangement of their positions. The cathedral being elected to the glory of God and in honour of St. Andrew, he, as the patron saint, occupies a central position, and is considerably taller than the other Apostles, his head filling the upper portion of the canopy. Another statue, with symbols so completely decayed that his identity is difficult to discover, may not improbably be St. James the Less, the figure being remarkably short, and the head unusually large. There are traces upon all the figures of colouring, though slight, yet in the protected parts of the robes the deep maroon colour is found, but no remains whatever of gilding, but the bright colours of the stone, affected by the weather, give almost the brilliancy of gold.

To those who are acquainted with this cathedral, it will hardly be necessary to point out the striking effect produced by the multitude of slender shafts at the several angles of the buttresses, and in the niches and arcades. These shafts, many of them in lengths of 13 ft., in one piece of blue lias, by their number and position form a great feature of the front; unfortunately a number of them, owing to the perishable nature of the blue lias, have either crumbled away or been blown down. At various times, as these accidents occurred, other shafts have been supplied, but instead of being rein-

* By Benvenuto. † Wm. Torrel.

* By a reference to the details of this front, given by Britton in his "Wells Cathedral," it will be seen that his illustration of this part is most inaccurate: every niche is there shown as supported by columns on the same plane, and the artist has completely missed the charming deviation from the common rule.

stated in blue lias or other grey marble, Doulting stone has unhappily been used. The charm, therefore, which was produced by the beautiful tint of the grey shafts has been wholly lost, and the monotony produced by a large quantity of small stone shafts is most palpable. There are, however, a few of the original shafts yet remaining, and the pleasing effect they produce, especially when the setting sun shines upon them, has only to be seen to be appreciated. Colour entered as much into the minds of the great architects of earlier days as form and composition, and no repairs to this beautiful west front can be effected, which does not reproduce, as far as practicable, the original conception in the colour of the materials.

In an early water-colour drawing of this cathedral, made by Turner, that great artist showed the beautiful variety of tint produced when a great number of the original shafts were yet standing: nobody knew better how to express in colour the pleasing contrast which was produced by the judicious mixture of these materials.

It is to be regretted that the perishable nature of blue lias renders it unsafe to be used in the proposed restoration: the softness of its colour blending so well with the Doulting stone, points to it as the most fitting material, but after much consultation it has been resolved to use Kilkenny marble instead; its colour resembles blue lias closely, and of its durability no doubt can be entertained, as all the buildings in which it has been employed affords ample evidence of its excellent qualities.

The Devonshire and other marbles possess a purple hue very unlike the blue lias; and where so large a number of columns, &c., are required, it is of the highest importance that the colour intended by the original architect should be secured. Those who have watched the condition of this great western portion of the cathedral have seen with deep regret the rapid decay going on from year to year: every winter or heavy gale produces fresh mischief, and within a late period the fall of canopies and portions of the statues and bases has become dangerous to those daily passing by the north-west corner of the cathedral.

It is of the utmost importance that every feature of this incomparable front should be saved, if possible; but this can only be accomplished by a timely renewal of those parts of the design which are essential to the protection of others. By way of example, I will only allude to the abaci to the capitals of the upper series of niches, containing successive groups of figures, illustrating the Last Resurrection. All these abaci and their supporting columns were of blue lias, or some imperfectly-formed marble. The former have *entirely disappeared*: not an abacus remains; and, as a natural consequence, the wet having penetrated to the carved foliage of the capitals, the frost has materially damaged them, and *all* will be destroyed in a short time, unless some steps be taken to arrest the progress of destruction. Again, I find that, although especial care was taken by the original builders to prevent the crushing or injury to the joints by the insertion of oyster-shells into all the bedding joints of the masonry, yet sufficient caution was not taken in placing the Doulting stone on its natural bed. Hence in many places it has already split and fallen, and there are *many parts* of the west front which must speedily become ruinous, and ought at once to be removed and replaced by good stone rightly bedded. It is not difficult to discover where this defective material is used, as a slight tapping on the face will crush the surface, already weakened by cracks and fissures, through which the weather penetrates.

It is important that nothing should be done to this front but what is really essential to the conservation of the valuable artistic work which remains. Neither *new forms* nor *materials* of any kind should be permitted; it is indeed lamentable to observe the disastrous effects which the last few seasons have caused to this beautiful façade. A mere comparison of the engraving in Britton's work, published in 1824, with the present state of the front, will show the ravages which time has produced; but this is not the sole cause of mischief. In former repairs, *cast-iron* ties and plugs were extensively used; these have done immense damage, and objects probably safe, if they had been left undisturbed, have been shattered by these injudicious efforts at protection. In any other precautionary steps, *copper* dowels and cramps only should be used.

HAMPSTEAD.

A NEW Baptist Chapel was opened on Thursday last, at Child's-hill, Hampstead. The design is Byzantine in style, and consists of nave and side aisles, with gallery at front end. The doorway is double, and the whole entrance is embraced by a bold circular arch, pierced with a quatrefoil window, the spandrels being filled in with encaustic tiles. The front window has seven quatrefoil piercings, and is inclosed in a semi-circular arch, with carved imposts and label terminals.

There are large schoolrooms under the back portion of the chapel, with class-rooms attached. The ground-floor is furnished with three vestries. The chapel is capable of seating about 500 persons, but it is designed so as to admit of side galleries and longitudinal extension, to eventually hold 800 persons. The cost of the whole, including boundaries, will be about 1,250*l*.

Mr. W. Allen Dixon, of Kentish-town, is the architect; and Messrs. Wicks & Co., of Limehouse, were the builders.

All doubts as to the purchase of the Heath for the use of the public can now be set at rest, for Mr. John Pollard, the clerk to the Metropolitan Board of Works, has given notice of his intention of applying in the next Session of Parliament for leave to bring in a Bill to confer upon the Metropolitan Board of Works powers to obtain it.

HAYMARKET THEATRE.

MR. W. S. GILBERT'S fairy comedy, "The Palace of Truth," is an excellent work, both in a dramatic and literary point of view. As for the plot, it is enough to say that all who enter the palace, with the exception of one who holds a talisman, are forced to speak the truth on every occasion, without being aware that they are doing so, to remind readers of fairy tales of the story on which the play is founded. The first act moves a little slowly, but the following two, when the influence of the palace is at work, are full of lively interest, dramatic surprises, and poetical writing. Mr. Gilbert, if he continue in the course he is now pursuing, will materially help forward our dramatic literature. Mr. Buckstone, Mr. Kendal, and Mr. Everill, who have parts, much aid the success; but the chief praise for acting must be given to Miss Robertson (the *Princess Zeolide*), and Miss Caroline Hill (*Mirza, her companion*), the latter of whom has never had so good a chance before, and makes the most of it. The acting of both these ladies, in the last act especially, is admirable, and worthily justifies the nightly recall of each after certain speeches. Two poetical landscapes, and an Eastern interior, by Mr. Morris and Mr. O'Connor, provide appropriate setting for an elegant and artistic work.

ELECTION OF A CHAIRMAN FOR THE METROPOLITAN BOARD OF WORKS.

AT a special meeting of the Metropolitan Board of Works a successor to the late Sir John Thwaites, chairman of the Board, has been elected.

By a resolution passed at a recent special meeting, the appointment to the office was to be for one year only, the salary being 1,500*l*. a year.

When the voting was proceeded with, the following was the result of the show of hands:—For Colonel Hogg, 24; Mr. Dalton, 15; Mr. Le Breton, 18; Mr. Runtz, 11; Mr. Savage, 16. Mr. Runtz having the lowest number of votes, his name was withdrawn.

A second show of hands was taken:—For Colonel Hogg, 23; Mr. Dalton, 15; Mr. Le Breton, 20; Mr. Savage, 13. Mr. Savage's name having been withdrawn, another poll resulted in there being 20 votes each for Colonel Hogg and Mr. Dalton, and 14 for Mr. Le Breton. On the two former names being submitted there were:—For Colonel Hogg, 20; and for Mr. Dalton, 16.

The final show of hands gave 22 votes for Colonel Hogg, and none against him. A division was, however, called, when there were—

For Colonel Hogg	24
Against.....	12
Majority	12

Mr. Collinson declared Colonel Hogg elected, and vacated the chair, to which the newly-elected chairman was conducted amid loud cheering.

Colonel Hogg thanked the members of the Board for having elected him to the highly responsible position of its chairman. He entered upon the duties, he said, with a feeling of the deepest responsibility, and he looked to the various chairmen of committees and other members to aid him by their co-operation in preserving the honour and dignity of the Board.

It having been known that the Board had determined to elect one of their own number to the chairmanship, Sir William Fraser withdrew his candidature. Lord Robert Montagus was nominated, but not seconded, as a candidate, and the nomination, therefore, fell to the ground.

Colonel James Macnaghten Hogg is the eldest son of Sir James Weir Hogg, bart., a member of the Indian Council, and who represented Beverley and Honiton in previous Parliaments. He was born at Calcutta in 1823, and was married, in 1857, to the eldest daughter of Lord Penrhyn. Colonel Hogg was educated at Eton and at Christ Church, Oxford. He joined the 1st Life Guards in 1843, became major and lieut.-colonel in 1855, and retired in 1859. At the general election of 1865 he was returned, with Sir William Tite, for the city of Bath without opposition. In the House of Commons he was a supporter of the Conservative party. He described himself as "not opposed to progress, but against all rash and dangerous innovation; in favour of the relief of Dissenters from Church-rates, and of retrenchment in the national expenditure, but not so as to impair the efficiency of the Army and Navy." At the general election of 1868, Colonel Hogg was defeated at Bath. Since that time he has been without a seat in Parliament.

MEDIÆVAL PLANS.

WITH respect to your article last week on the use of architectural drawings by the Mediæval constructors, I should wish to mention a fact not too generally known.

The architect of the Cathedral of Candebec (Caux) is buried in the Lady Chapel, well known for its pendent vault; one side of the memorial tablet is taken up by a *plan of the cathedral* slightly cut into the stone and blackened.

The date of the above church can easily be ascertained; from what I recollect of its architecture, I should think it belonged to the beginning of the fifteenth century.

Mr. Gwilt, in his *Encyclopædia*, gives a section of this Lady Chapel, and I should very much like to know how he obtained it.

JOHN B. COHEN.

OPAQUE GLASS FOR MURAL DECORATIONS.

WE mentioned, some time ago, the use that was being made by Messrs. Jas. Powell & Son, at Whitefriars, of opaque glass of various colours cut into forms for wall pictures, in the same way that transparent glass is cut for medallions in windows, the enamel shading being burnt in. They have since spent time in perfecting this material, and making it applicable for ornamental panels and for pavements, and have set up a reredos in Cheddington Church, formed entirely of this material. This reredos has a subdued and agreeable effect, and will doubtless prove very lasting. It seems to have been made purposely to represent an ancient work by irregularities and stains, a proceeding the principle of which we are not bound to commend. Mr. Alexander Nesbitt has recently exhibited drawings from some mosaics which are preserved in the Palace of Prince del Drago (formerly the Palazzo Albani) at Rome, and originally formed part of the decorations of a hall in the Palace of the Sicinian family, which hall was afterwards converted into a church, known as St. Andrea, in Catabarbara, and was pulled down in the seventeenth century. These mosaics are composed of pieces of glass and marble, cut into such forms as to fit them to form parts of the design, as in the same manner pursued by Messrs. Powell. Mr. Nesbitt writes,—

"Considering the style of art and the subjects, the story of Hylas, and figures of Egyptian divinities, the larger portion cannot with probability be attributed to a later date than the third century of our own era, and the other subjects probably of about the same period. Several facts known as to the manufacture of glass in Rome are quite consistent with the assignment of this date. Glass, of all shades and colours, both transparent and opaque, was at that period largely used by the Romans for covering walls, not only in Tesseræ, but in shaped pieces as stated above."

Messrs. Powell's endeavours in this direction should certainly be aided. The material, if properly set, is applicable for external as well as internal work.

THE USEFUL, STRUCTURAL, AND BEAUTIFUL, IN ARCHITECTURE.*

I do not intend to treat the profession of an architect as something which requires to be dreamily thought of, or dreamily spoken about. I wish to look at it in a common-sense way, so as to see, if possible, what elements he requires to study to develop the high objects of his profession; and, to do this, I wish to consider all that is good in architecture as the result of that which is *Useful*, *Structural*, and *Beautiful*.

In speaking of these separately, I wish you to keep in mind, that, in my opinion, all three are needed to produce architecture in its truest or highest sense, viz., beauty being dependent on that which is truly useful and structural, or, to put it more strongly, I hold that it is impossible to get beauty, unless you have the stamp of fitness for the object intended to begin with, and then the adaptation of the material in a structural or symmetrical sense, these two elements being needed to lead on to that which we call beautiful.

I have heard it advocated that an ugly thing might be quite as useful as a shapely or well-proportioned thing; but this I cannot agree with in the fullest sense, as we every day find that the higher the development in an æsthetic sense, the greater its value as to use. No doubt we may quench our thirst by going on our knees at the burn-side, or we may do so out of the ugliest article that ever was devised; but you will agree with me that there is a higher sense of enjoyment in drinking out of a vessel which has the stamp of use and beauty combined. Or again, you may get shelter and a certain kind of convenience by living in a hut on the hill-side, or within the four walls of a building whose proportions are of the most ungainly kind; but surely the shelter and convenience of a house that is well shaped and well proportioned is more to be desired; as, besides the utility of it, an æsthetic sense of pleasure will be got, which the badly-proportioned building can never give; and it is with these views that I come to speak of the importance of

The Useful.

The need of the architect making this his first consideration is very obvious. A thing, to be of the highest value, must be useful, and nothing more so than the houses we live in. A house should be arranged so as to suit, or even improve, the habits of the people who live in it. It should be convenient for the carrying out of domestic arrangements in the simplest and easiest way. It should be a healthy house, otherwise it sadly fails in that which a habitation ought to be; just as we find that beauty and symmetry in nature go for nothing if the germs of disease are at the root of it.

In the matter of convenience and completeness, houses should be as far as possible self-contained, both inside and outside. This should be striven for in designing houses of all classes, but especially those of the lower, as the occupant is always more independent if he has his own door to go in by, and when in, to have each room so placed that it can be occupied independently of another; and no kind of designing taxes the architect more than that of arranging a small house so as to make it thoroughly useful in this respect.

A mistake is often made in not having the bedrooms of the largest size that the internal space will admit of, and the value of this is so well known to those who have the benefit of large sleeping-rooms, that the wonder is that architects should sacrifice the bedrooms of a house to those of the day-rooms.

No man in the world has more to do with the health of a community than the architect. He has the means, so to speak, of creating buildings which will either be constitutionally healthy or unhealthy. If the house is contrived, to begin with, so that it is deficient in that which provides for ample light, ample ventilation, and good drainage, it gradually becomes a diseased house, which nothing will cure; and I cannot impress upon you too strongly the need of designing houses which will prevent, as far as possible, that share in the death-rate of our city which unhealthy houses lead to.

The evil of ill-arranged houses, bad drainage, and overcrowding, as affecting the health of the people, is every day becoming more important and better understood. I therefore press upon you in the most earnest manner the responsibility that attaches to your profession in this respect.

A useful, healthy, and beautiful building has a moral and physical effect upon people, apart altogether from its value as a beautiful object; and I do beg of you that, in planning, you give places where bad air is likely to be generated, plenty of glass, plenty of daylight, and not windows which are mere pigeon-holes.

Glass does not shut out the benefits of sunlight to the same extent as stone walls do, and nothing is better for ventilation than the simple method of lifting up or taking down the half-sash of a window of ample size.

It pains one to see houses erected every day with these small openings, 12 in. square, or something like that, which, apart from what I have mentioned, cannot even give light for the purposes of cleanliness, and such a sparing of glass can have no excuse now that we have no tax upon the number or size of the windows of our dwelling.

Apart from providing means for plenty of light or plenty of air, a house can be so arranged as to situate those places connected with the sanitary portion of the house so that the drains need never pass under the building at all. This system of passing sewerage drains right through and under the building is one of the greatest sources of disease that I know of. It is a mere question of planning to have closets and sculleries on the back wall of the house, free to be lighted and ventilated from the open air; and when this is done, the drain never goes further into the house than half the thickness of the outer wall. The main drains should always be at the back of the building, and not at the front.

Another important consideration as to drains is their ventilation. Drains, if treated as well-ventilated coal-pits are, need have no bad gases in them at all. Drains, as usually formed, are sealed up at every point by traps and cesspools, and have the gases bottled up in such a way as to be under constant pressure, and find their escape into our houses at imperfect junctions of the drains, incomplete cesspools, or even through the cesspools themselves, as I verily believe that drains without ventilation have the gases acting in the same way as the gases of badly-ventilated coal-pits, and with their convulsions and explosions, forcing the bad air through the cesspools, however well trapped they may be; therefore I am not at all satisfied with the present system of trapping drains.

I cannot leave the consideration of the Useful without noticing particularly a failure in the design of many buildings as far as the Useful goes, and that is, the disposal of what is considered the inferior part of the house (but which I think as important as any), so that it is almost impossible to give it that share in the structural and beautiful part to which it has a right.

How often do you find, for instance, in villa dwellings, the kitchen part of the house standing out in the most objectionable way, which must not only render it an eyesore to those who own it, but a continual obstruction in the view of others.

Architects who have the laying out of the grounds for villa buildings, can do much to prevent this, by foreseeing how one building will stand in relation to another, as very often the ground is so laid off, that instead of the feuer commanding the view which he expected, he finds the principal rooms look out only upon that which obstructs the landscape.

Good planning, and giving the back of the building some little share in the taste which is wholly devoted to the front, would obviate this to a great extent.

Again, nothing about a house is of so much use as the chimneys, both for the purposes of smoke and ventilation, and yet how badly they are treated. They are placed in every possible awkward position, and are got rid of at the earliest possile point of the structure, so as to necessitate the various chimney-head devices which mar so much the sky-line of many of our street and villa buildings. Why should chimney-heads be treated so? You would suppose in some cases that the designer was ashamed of his roof and chimney-heads, and wished either to keep them out of sight altogether, or to degrade them so that they might have no share in the otherwise pretentious parts of the building. No parts of a building are more useful, or give the architect a better opportunity for crowning his structure with that which may be made beautiful.

Before leaving the useful, I would impress upon you the study that is needed for making our churches, theatres, and music-halls, useful to the fullest extent. In all three the same useful elements have to be considered, viz.:—

1st. The form which will give least obstruction to sound, so that both speaker and hearer may lose nothing. 2nd. The position of the speaker in relation to the hearer, so that each may see and be seen. 3rd. The comfort of both as to seating, heating, and ventilation, so that full enjoyment may be derived from that which is spoken, acted, or sung. These things being well considered, will assuredly lead on to that which is symmetrical and beautiful.

I stated at the outset that I wished to consider architecture in a common-sense way, and to get at the sense of this division of it; I know of no better teaching than that which you get by looking how nature works in this respect. We find, for instance, that when man tries to get that which is most useful, the health, symmetry, and beauty of the thing desired go hand in hand.

If you wish to grow a useful tree, or to rear a useful animal, you have to consider how to nourish both, so that their vigour may not be impaired by bad soil, or bad feeling, or by anything that will impair the health of either; and if this be wisely done, you may depend upon it that more perfect symmetry and a more perfect beauty will be the result.

As in nature, so in architecture; and this leads me, without further preface to speak of the

Structural.

Although I have divided my subject into the structural division of three, I find it a difficult matter to prevent repetition, owing to the way in which these blend and work into each other. But as this difficulty only proves my proposition, I must not grumble in having to use too many words, so long as you have patience to listen.

This blending is observable in that which leads to the judges of our flower-shows, agricultural meetings, &c., determining what are the best points of that which should get the prize. It is that which combines use, form, colour, and such like, which are all elements of beauty. For instance, the Clydesdale horse which would take a first prize would be the animal which, in the matter of use, would have strength, health, and action, and these would result in true symmetry, which again would give beauty to the whole.

A building may be convenient and healthy, but unless it is substantial and well-constructed it is of little value. No doubt a house may be made strong enough by the mere heaping up of material, without regard to proportion, symmetry, or anything else, but this is not treating the structure in a scientific way, or in that way which will lead on to its being beautiful. In any erection designed upon scientific principles, whether of iron, wood, or stone, there should be little or no waste of material; in short, neither more nor less than that which will give it stability and endurance. I admit that it is a difficult matter to get at this accurately, and that it is better to lean to the side of strength than to that of weakness, as beauty will not easily be marred by that which gives it power, unless you go so far as to create the feeling of the structure being overloaded by the material used in it.

An element in structure which ought never to be lost sight of, is to consider what form is best adapted for enduring the strain which comes upon it, keeping in view, of course, the nature of the material which has to be used. For instance, it is a gross mistake to construct an arch of timber where the strain is that of a moving load, while the same form may be quite suitable and last long enough if the strain is the result of mere dead weight alone. It is a mistake, too, to attempt to combine materials of different properties, such as iron and wood, or malleable and cast iron together; they will never work equally, and should therefore never be combined.

As to the true use of material, I do not believe in any rule-of-thumb arrangement, but in that which springs from a geometric foundation, and I would have architects therefore frame their designs upon that principle.

Taking stone as the material which architects have most to deal with in this country, I need not say how valuable a knowledge of Geology and Mineralogy is to the student;—geology instructing him as to what is likely to be found; mineralogy enabling him to determine whether the structure of the material is fit for the purpose required. The stone which is found in a district is always most suitable for it, if properly treated, and from a want of knowledge in these two branches of science I have seen architects and engineers adopt styles of building

* By Mr. James Gowans, architect; read at opening meeting of the Edinburgh Architectural Association, November 2nd. A number of photographs of Classical Structures, lent by Mr. Matheson and Mr. David Cousins, were exhibited.

quite unsuitable to the character of the material they had at hand; this occasioned the using of stone from a distance, at a much greater expense, and not more suitable for the thing that had to be done.

I will merely glance at other considerations as to the structure:—

1st. A building must be perfectly strong, and fit to stand without fracture; therefore the foundations require to be thought of,—that is, not founding one part of the building on soft, and another part on hard ground.

2nd. Provision for sustaining equally walls which have to go to different heights, or which may have to carry unequal loads.

3rd. The bonding of material together so that all may have their due share in sustaining the structure.

4th. The allowances which have to be made for settlement of walls, where a lighter thing has to be tied to a heavier, such as the spires and towers of churches, oriel windows, and such like.

5th. The strength and durability of material.

6th. The causes which lead to what is commonly called "*dry*-rot," but which I believe should be called "*wet*-rot," the result of timber being used which, to begin with, was constitutionally liable to the bad effects of damp, bad air, or other influences which tend to consumption.

These are only a few of the many points which, in a practical way, require to be considered, as every day we see buildings bulging, fracturing, and going to decay, from neglect of what could easily be guarded against in such cases.

No doubt some men are born with an intuitive perception for that which is proportionable and well adjusted; just as we find men who have naturally a bias towards other things, and which they acquire more readily than the man who has to go to the fountain-head for his instruction. At the same time, the man who has the thing born in him cannot dispense with the mathematical rule, which leads him to the truth of the science which he is acquiring.

It is the same in architecture, and the true way is to design upon some geometric principle, such as multiples of cubes, equal diameters, or uniform angles. By planning in this way, you economise space; you work upon harmonious lines, preventing anything like discord or competition, where angles have to be used; and you are sure thereby to have the elements of true construction and proportion in your building,—thus laying a foundation for that which will give beauty. At the same time, I need not tell you that although you may be working on true principles, you cannot all at once arrive at that which is anything like perfection in architecture. This is the case in everything else that requires development, and particularly so in architecture, as you cannot be building up the one day and pulling down the next, that which has been raised with the simple view of testing the principles on which you are designing.

In painting a picture, or modelling in clay, either of these costs little trouble, and little loss to obliterate if unsuccessful; but it is a different matter with a building, and what I would like above all things would be, that the younger members of the profession who have not yet gone far in the rut of off-hand designing or imitating other styles, would try this system, and persevere in it. I am certain they will arrive at the same opinion as myself, as to its value in getting easily at that which is most to be admired in architecture. In closing the consideration of the useful, I asked you to think of what Nature did in this way; and, if there be truth at all in the manner I am placing this subject before you, you must go to the same fountain-head to see what she does in the way of structure. The principles which guide Nature never vary in the highest embodiment of God's work. How perfectly the structure of our own bodies is designed to sustain the wear and tear of the varied strains which are put upon them, and how geometric the principles are which give symmetry to that which we consider most perfect in the human frame!

This brings me to consider

Beauty,

as springing from the useful and the structural. If a thing has the look of fitness and true structural proportion, it will please the eye without further adornment. I have already said that I thought a heavy responsibility lay upon an architect as to the effect of houses upon the health of the people, and also as to the power he had by proper internal arrangement, of improving the habits of all classes, more especially that of the lower. In short, he can forward the moral and physical condition of a community by the kind of houses which he plans. Besides this, I would lay another burden upon him, and that is, that he should use the power he has of teaching or developing the perception of beauty, which in the mass of the people lies dormant.

Some have naturally an eye for beauty in architecture, just as some have an eye for a good picture, or a good piece of sculpture. Now, these are teachable things, and the province of instructing the public in these arts, rests very much with the architect, the painter, and the sculptor; and you will never get their support to the same extent in the encouragement of these arts, until they can appreciate and put a true value upon that which is really beautiful. In architecture many people are ignorant enough to believe that the useful cannot be combined with the beautiful, unless at a sacrifice; or rather perhaps that not having an eye for that which is symmetrical and beautiful, they rest content with that which is ill-shaped and ugly.

One house may have simply the four walls and the roof that covers them to give it beauty in a symmetrical form, while another may have extreme size, broken outline, and profusion of ornament. But if the latter has not been designed in conformity with that which is proportionable, there can be no real beauty. There may be something in its mass and ornamentation that will please the uneducated eye, but which will fail to give that lasting pleasure, which beauty, springing from true principles, always gives. The education of the eye of an architect is what can only be brought about by a close study of that which is truly shaped and well proportioned; and one of the first and best lessons to get, is to design upon the geometric principles which I have before alluded to. Besides teaching the eye to catch that which is most subtle in beauty by drawing from nature, I have a great belief in the good that has to be got by modelling, drawing in perspective and sectional drawing, so as to enable you to see the object with the mind's eye from every possible point of view. No mere geometric line drawing can give you this faculty, and I know of none more valuable to the architect for producing beauty in detail. How often do we find something designed which looks very well on paper, but when executed and taken in conjunction with other objects, which have an influence upon it, appear quite different from what was expected.

One of the early lessons in this way which I myself got in drawing, was the practice of making sections of the most intricate things, cutting them up in every possible direction, so as to get at the form which this method of drawing gave.

Another thing that mars the beauty of some of our principal buildings, and which could easily be foreseen by mere perspective drawings alone, is the effect such structures have in conjunction with other important buildings, or surroundings. The frontage gets all the beauty, so that while in looking at the geometric front of the structure, you are ready to admire it, yet the moment you step aside and allow the eye to reach the roof, gable, or chimney-heads, you find an ill shape and ungainliness which quite destroy the general effect of the building itself as well as those adjoining it.

The detail of a building should, like music, be harmonious and truthful. Nothing is more painful to my eye than a conglomeration of angles all competing and all at discord with each other. You find nothing of this kind in what are called the "true styles." The ornamentation of such styles naturally springs out of the construction, or takes its key-note from the geometric figure, which lies at the root of the design. For instance, in the Greek in its purest, the geometric figures are the square, the circle, and the elliptic curve, and these are all that are needed for its development, whether as to use, symmetry, or beauty,—or again, in the Gothic, the square, the circle, and the equilateral triangle are the only geometric forms that are required to bring about the same result. Another thing which, to my surprise, exists notwithstanding all that has been said and written about it, is that designers still attempt to get beauty by using deceptive objects, which would lead one to suppose they had begun by making the exterior of the building their first thought, and that the inside had to be sacrificed to the outside. This springs from trying to imitate styles of building belonging to times when the wants and requirements of the people were very different from what they are now.

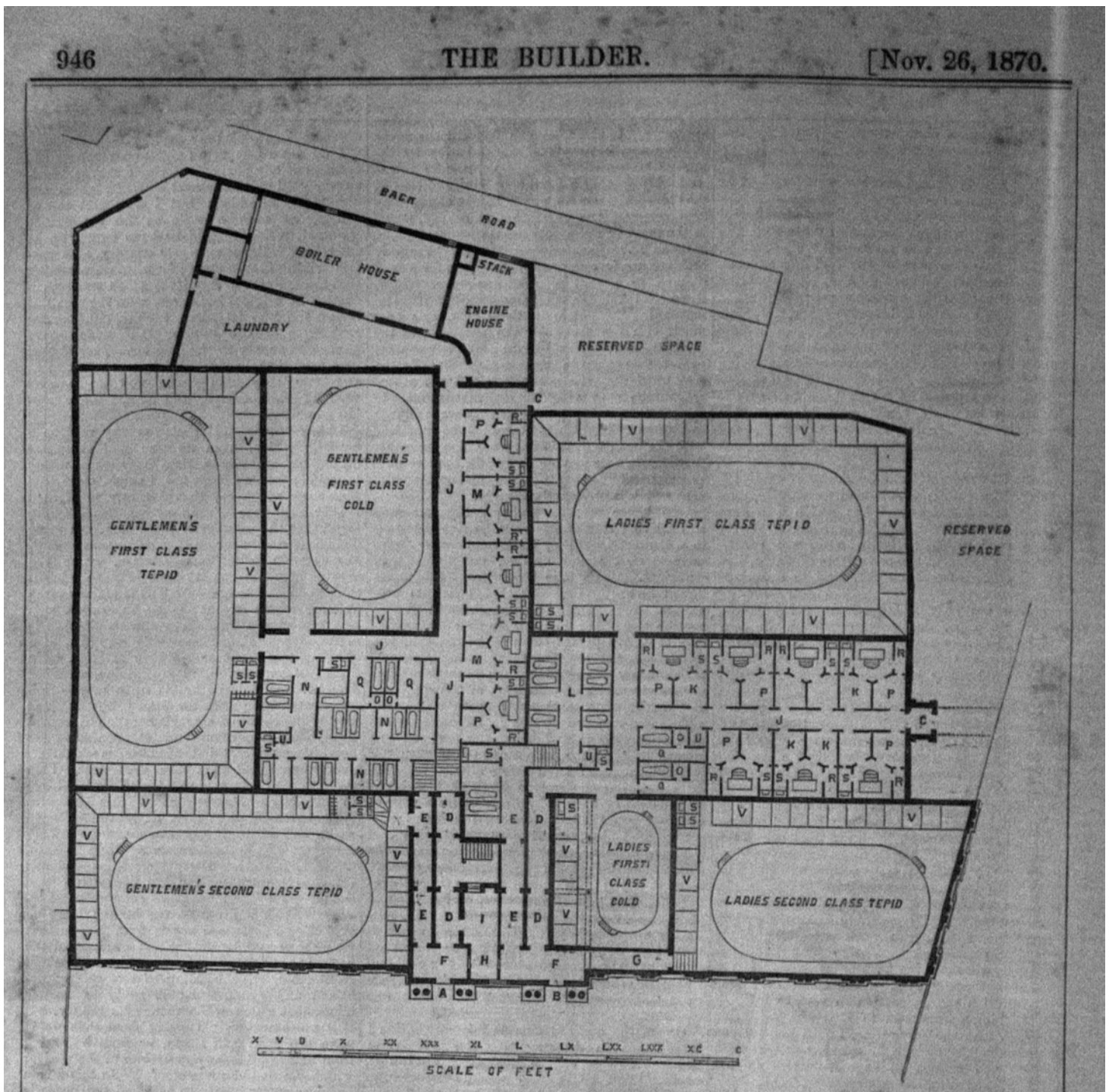
I do not object to an architect adopting the features of any particular style, if that style can be produced by the natural wants for which the building is intended; but I do object to the abusing of such a style as the old Scotch Baronial, which seemed to have sprung up as something indigenous to our country, at a particular time in its history; for we must remember that the features of that style which we so much admire in original buildings, were the result of honest and true designers, working out from the necessities of the interior that which gave power and beauty to the exterior. They at that time needed their embattled towers and turrets, and hence they used them; now we have no need of such things, and hence their uselessness.

I have already said that you may rear up a building which, from its size and expensive decoration, will for a time be spoken of as beautiful; but no lines are, I think, more true than those which say that "Beauty unadorned is adorned the most." In my experience I have found that the simpler a thing was, the more difficult it was to design it so as to give beauty. For example, a workman's house, which has nothing about it but its form to make it beautiful, taxes the designer fully as much as a large building where expense is no object. A man who can plan a small house with all that is useful, structural, and beautiful; who can, with a well-proportioned and simple exterior, have fitness of purpose, is, in my opinion, an abler designer than he who builds up a large structure, gets what passes for beauty, but which is simply the result of a conglomeration of broken lines, badly-proportioned masses, confusing and competing angles, blind windows, mock turrets and tympani, and such other deceptions. I am sorry to see these things adopted by architects in our city. Do beware of this deceptive system of designing: it is untruthful to begin with, and in that way can never be useful. Nature, which is the fountain-head of all beauty, never acts thus. Everything is needed and suited to its purpose, and the higher the form the more absolutely are these rules adhered to. What a finish is given to the human figure by that covering which conceals from the eye that which is needed for the use and structure of the body, but which otherwise would be unpleasing! In like manner, a building that is well proportioned and symmetrical is ready to receive adornment which will enhance its beauty, but that adornment should spring from that which gave the form and shape, or from borrowing from nature emblems appropriate to the uses for which the building was erected. In this way a building may not only be enriched and properly dressed, but it will be able to tell its own story as to the uses for which it is intended.

In conclusion, I should like to press upon your Society, what I have pressed in other quarters, and that is, the need we have of getting our architectural students more thoroughly educated in an elementary way. Under the present system of training, the pupil is expected to learn all that he ought to know of his profession by a few years' drawing in an architect's office, where there is little or no instruction given as to the principles of his profession, the chief or head clerk's time being too much taken up with the bustle of business. Hence we find that there is much ignorance of the main objects which architects ought to attend to, such as those I have pointed out; and things will not mend in this way unless architecture meets with encouragement from Government, or otherwise, as has been done in forming chairs for agriculture, engineering, and such like. I have said that an architect has more to do with the health of the people than any other person: this being so, common sense tells us that his first duty is to take means for making himself thoroughly acquainted with all that will conduce to that end, and so act upon it. A healthy nation is an able nation in every way. It is more useful, stronger, and more perfect than a people who are morally and physically weakened by bad housing and bad drainage, the improvement of which is particularly the province of the architect.

In closing this address, I trust that I have struck at the truth in some of the points which I have noticed; and, though rudely conceived, that it may be like a building whose merits lie in the usefulness and correctness of its design, and not in the polish or ornamentation of the material of which it is composed.

a



NEW BATHS, SOUTHPORT, LANCASHIRE.

Plan of Ground Floor.

REFERENCES.

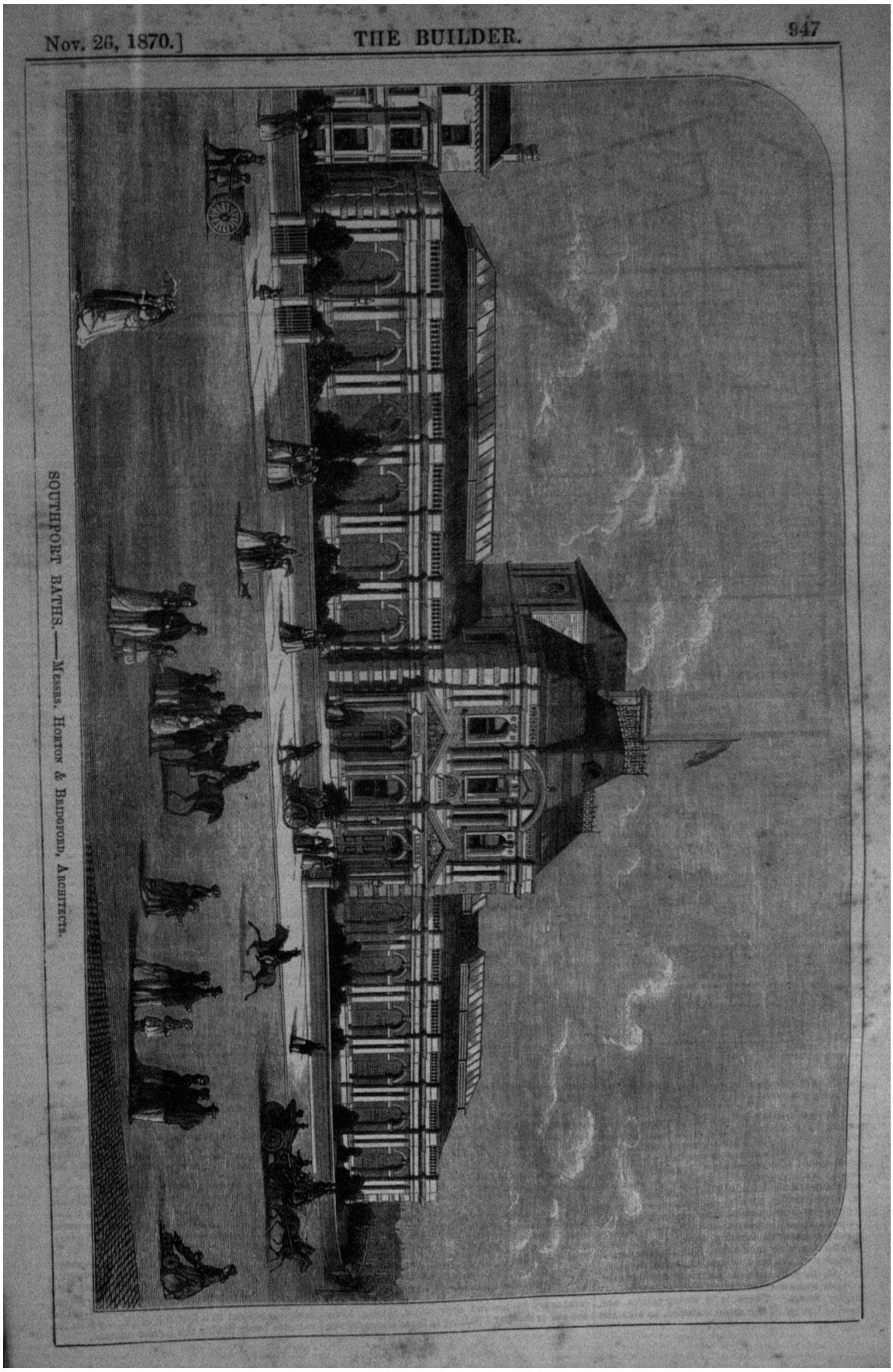
A. Gentlemen's Entrance.
B. Ladies' Entrance.
C. Side Entrance.
D. First-class Entrance.
E. Second-class Entrance.
F. Lobby.
G. Corridor.
H. Tickets.
I. Office.
J. First-class Corridor.
K. Ladies' First-class Private Baths.
L. Ladies' Second-Class Private Baths.
M. Gentlemen's First-class Private Baths.
N. Gentlemen's Second-class Private Baths.
P. Dressing-room.
Q. Vapour Bath.
R. Shower.
S. W.C.
U. Soap.
V. Dressing-boxes.

OPENING OF THE NEW BRIDGE OVER THE SEVERN AT STOURPORT.

THIS new bridge has been thrown open to the public. The viaduct, which is about 1,000 ft. long, consists of forty-five segmental arches, the centre one over the river being of iron, and 155 ft. clear span. The spandrels of this arch are filled in with tracery, a shield forming the centre-piece with bars and the initials "S. B. T., 1870." There is a projecting cornice supported by ornamental brackets, surmounting which is an open balustrade, with panels and pilasters, and a moulded handrail forming capping, and ornamental lamps on each side. The abutments and a portion of the land arches, extending to about 100 ft. on each side of the river, and also the parapet walls surmounting the same, are built of Higley stone. There is a string-course and cornice formed of the same material, as also the moulded caps to pilasters. The remaining portions of the viaduct at either end are built in brickwork upon piers rising from inverted arches; the whole of which, as also all other portions of the masonry, are upon a foundation of concrete made of gravel and blue lias lime. The parapet upon this portion of the work is in brickwork, forming panels and pilasters, having a yellow moulded brick string, and coped with Higley stone.

The roadway is 25 ft. wide, and the footpath 5 ft., the latter paved with Staffordshire blue diamond bricks, the same being kept in place by a Rowley rag curb. There is also a new toll-house: this is faced with pressed red bricks, with Higley stone dressings: a porch of the same material shelters the toll-keeper. About ten months were occupied in erecting the temporary bridge and approaches, taking down the old bridge, and putting in foundations for the new. The erection of the superstructure has occupied nine months. There has been used in this work the following material:—Timber in piles, coffer-dams, staging, and temporary bridge, 20,000 cubic feet; 20,000 cubic feet of stone, 5,000,000 bricks; concrete, 5,000 yards; and 500 tons of iron.

The designs were supplied, and the works carried out, under the direction of Mr. Edward Wilson, C.E.; Mr. G. H. Ashbee being his acting assistant. The contractors for the ironworks were Messrs. Lloyd, Foster, & Co., of Wednesbury. The contractor for the other portions of the work was Mr. Henry Hilton, of Birmingham. The ironwork was carried out under the superintendence of Mr. R. Braithwaite, the other portions of the work by Mr. T. Vale; Mr. J. Eales, acting as clerk of works for the engineer. The bridge is subject to a foot-toll of ½d., the tolls for vehicles being double the former amount.



SOUTHPORT BATHS.—Messrs. Horton & Bridgford, Architects.

SOUTHPORT BATHS.

These baths are now in course of erection, by the Southport Baths and Assembly Rooms Company, Limited, on the site of the late Victoria Baths Promenade. The material, externally, is Burnley Pierre-point facing, with Longridge stone dressings. The whole of the baths will be on the ground floor, and will be well lighted by top-lights. All the internal walls will be plastered, and the first-class swimming-baths arcaded, with moulded caps and architraves. The principals of the large roofs are of cast-iron, elliptical in form, cast in two pieces, and will spring from moulded corbels, at level of pilaster caps.

The stairs at back of office lead to a board-room, 40 ft. by 20 ft., with retiring-room and lavatory adjoining, and a mezzanine floor is formed between this and the ground floor.

The whole will be opened for public use by May next, and the total cost, including engineer's work, will be about 23,000*l*.

Messrs. Horton & Bridgford, of Manchester, are the architects; Mr. C. H. Beloe, of Liverpool, is the engineer; and the contract has been let to Messrs. Swindells & Little, of Manchester.

We will go into some particulars as to the intended supply and the arrangement of the machinery.

The salt water required for the baths will be pumped from the sea through cast-iron pipes, 9 in. in diameter, laid on the shore, down to low-water spring-tides, which is a distance of 1,480 yards from the pumps, thus ensuring a constant supply of water, except for a short period at extreme low-water spring-tides. At the end of the pipes a cast-iron cylinder, 6 ft. diameter and 6 ft. deep, is fixed. Inside this cylinder there is another, 1 ft. 6 in. in diameter, and of the same depth as the outer one. In the small cylinder is fixed an india-rubber foot-valve, resting on a cast-iron grating. The space between the two cylinders is filled with stones and gravel. The outer cylinder is open at the top, while the inner one is closed at the top, but has perforations in the lower part of its circumference. The suction-pipe from the pumps communicates only with the inner cylinder above the valve. The water will thus have to pass through the stones and gravel between the cylinders, and to rise up in the inner one before it enters the pipe. By this means it is expected that a considerable portion of the sand will be removed from the water before it reaches the pumps, and thus diminish the wear and tear of the working barrels.

The suction-pipe is carried from the shore, through a culvert under the Esplanade, and thence into the building, where it is laid on the floor of the pipe corridor, the walls of one of the principal corridors of the building having been carried down to a great depth for this purpose, thus rendering the pipes easily accessible for repairs.

The pumps are placed in a dry well, sunk under the engine-room, which, together with the boiler-house and laundry, are situated in the rear of the premises, so as to be as far removed as possible from the portion of the building frequented by the bathers, and there is access to a back street for the convenience of obtaining coals, &c. The pumps are four in number, two being of the bucket and plunger type, and two having plungers only.

The stroke of each of the pumps is 3 ft., and the diameter of the working barrels is 12 in. Only two of the pumps will be worked at one time, the bucket and plungers being used when a large quantity of water is required, and it is necessary to draw it from near low water. The plunger will be used at high water, when the lift is reduced to a minimum. The pumps are worked from a counter-shaft fixed over the well, the connecting rods being so arranged that they can easily be connected with either set of pumps. The engines, two in number, are horizontal, and worked with high-pressure steam. They have cylinders 10 in. in diameter, with a stroke of 18 in. One or both of these engines can be used as required.

The pumping machinery is capable of furnishing a supply of over 313,500 gallons in twelve hours, which is more than can possibly be required in that time. The steam needed for the engines and for heating the water will be supplied by two doubled-flued Lancashire boilers, each 27 ft. long, and 7 ft. in diameter.

The laundry, which adjoins the boiler-house, is fitted with five steaming and similar number of washing tubs, which are supplied with hot and cold fresh water and steam. In one corner of the laundry is placed one of Messrs. Manlove & Alliott's hydro-extractors, which is worked from a shaft connected with the pumping-engine. After the clothes have been steamed and washed they will be placed in the hydro-extractor, which will rapidly remove the "heavy wet" from them, and the drying process will be completed by placing them in drying-rooms constructed over the boilers.

The salt water, after leaving the pumps, will be conveyed to two filter-beds, each 35 ft. by 28 ft., situated under the open space in front of the baths. The water will pass through beds of sand, gravel, and coke, in all 5 ft. thick, and then flow into a large covered brick tank adjoining the filters, capable of containing 177,000 gallons. From this tank it will flow by gravitation into all the baths, or can be pumped up into cisterns placed at the top of the building, in order to obtain a greater pressure for shower-baths and fountains.

There is also a tank over the boiler-house capable of holding 42,000 gallons: this will be used as a reserve for unfiltered salt water, which can be pumped into this tank when the filters and large clear-water tank are full, and which can flow into the filter-beds by gravitation when the pumps are not at work.

The plunge-baths will be treated by means of perforated copper steam-pipes, placed in channels under the floor of the baths, but which are in communication with the water in the baths. The plunge-bath, dressing-boxes, and the corridors, will be warmed by steam-pipes.

The hot salt water for the private baths will be supplied from two heaters, constructed in accordance with Messrs. Hamilton Wood's patent. They are each 10 ft. high, and 5 ft. in diameter inside, and are lined with copper, and fitted with copper steam-pipes; they are placed in chambers prepared for their reception in the front portion of the building, and are supplied with water from the upper cisterns. The first-class private baths will be supplied with hot and cold fresh water, in addition to the salt water. Two tanks for the fresh water are placed over the engine-room, and the water in one of them is heated by the exhaust steam from the engine. The fresh water will be obtained from the Water Company's main, and in addition the rain-water from a considerable portion of the roofs will be collected in an underground tank, and pumped into the supply-tank by means of a steam donkey-pump. The condensed water from the salt-water heaters will also be pumped up and used for feeding the boilers.

The total quantity of water contained in the plunge-baths is nearly 230,000 gallons. The amount of water contained in the salt-water tanks will be 254,000 gallons. There will be upwards of 1,500 yards of cast-iron pipes of various sizes from 9-in. to 3-in. in the building, exclusive of those on the shore. The whole of the machinery, filter-beds, engine-house, and the hydraulic arrangements were designed by and are being constructed under the superintendence of Mr. Beloe. The contractors for the engineering works are,—for the engines, boilers, tanks, &c., Mr. J. Clayton, of Preston; for the 9-in. pipes, Messrs. J. Varley & Co., of St. Helen's; and for the pipe-laying and culvert, Messrs. Fawkes & Maud.

The filter-beds and engine-house are being constructed by the company without the aid of a contractor.

The total cost of the engineer's works will be about 6,200*l*.

MENDELSSOHN AND STAGE MUSIC.

Sir,—The writer of some recent interesting and suggestive articles in the *Builder* on theatres and "gaffs," diverged, in the last number but one, into a consideration of the manner in which Mendelssohn had illustrated the "Midsummer Night's Dream" by music; the matter being worth, in his opinion, "a few lines of even indifferent talk." I fear your musical readers must have thought his talk on this matter very indifferent. He complains of Mendelssohn for having written musical illustrations not to be played whilst the speeches were being spoken, but between them; and would have had him write a continuous current of musical commentary to run parallel with the spoken dialogue on the stage. I should have thought that to any one possessed of a faculty of criticism, even if not uniting thereto an ear for music, it would be evident that as spoken words and musical tones and phrases appeal to two perfectly distinct faculties in the hearer,—the former, as I said in my last letter, appealing to his intellect, the latter to his feeling and imagination,—the two cannot possibly be rightly apprehended at the same time; especially as music absolutely demands a fixed and unalterable ryhthm, to which no spoken dialogue can ever conform. The only result of an attempt to combine the two would be that one must over-ride the other: if the music is to be really worth attention, the words must be drowned; if the words are to be properly taken account of, the music must be reduced to a mere mechanical drone, to avoid competing with the dialogue. But it is unnecessary to argue such a question on high critical grounds: the simpler practical test may be taken of trying how any musician would stand hearing a whole evening of talking against music. Any one so appealed to could probably bear testimony that, when in the midst of enjoying anything worth calling music, the slightest remark in an ordinary conversational tone is enough for the minute to destroy all one's pleasure in the music, and occasion often the greatest irritation and annoyance.

The theory propounded is just one of those which look very original and symmetrical on paper, but which every one practically conversant with the branch of art in question must feel at once to be erroneous. Mendelssohn did once, however, as I before observed, make the very experiment alluded to, of combining musical accompaniment with dialogue in one of his cantatas, and the result is, that this part of the work, when performed, is merely tolerated out of respect to his memory.

The writing of long interludes between acts and scenes is, I think, a perfectly legitimate way of keeping up the tone of feeling in an audience during the necessary intervals of a high-class drama, and a resource of which I wish we had more experience in English theatres. Beethoven did the same for Goethe's "Egmont," and Shubert for Schiller's "Rosamunda."

As a matter of fact, it is not the case that Mendelssohn never attempted opera: he wrote a short opera called the "Son and Stranger," containing one of the best comic parts in modern opera; and at the time of his death he was diligently searching for a fitting libretto for a grand opera, on which his mind was very much set.

I read the earlier articles on "gaffs" with so much interest that I can only regret that the writer should have been tempted to push his ideas into a theory which every musician must feel to be totally untenable, and which, if carried out, would soon result in emptying our theatres.

H. H. S.

THE BLOCK BOOKS: A CHALLENGE.

The contribution of Mr. John Piggot, F.S.A., published in the *Art Journal* of the present month, entitled "Albert Dürer and the Fairford Stained Glass," as well as the paper of Mr. Planché which appeared in the last number of the *Builder*, upon "Early Wood-engraving in connexion with Playing Cards," having both mentioned my name in reference to the opinions entertained by me upon the subject of "The Block Books," seems to impose upon me the duty of reviving that subject, so deeply interesting in every point of view in the history of literature and art, and to again invite attention to it, in the hope that at least those writers who have hitherto so strenuously upheld the "old system" may afford the public the advantage of their advocacy, and prove, if possible, my reasoning (which entirely reverses all preconceived notions on the subject) to be fallacious. Mr. Planché but does me justice in expressing his belief that, so long as the truth is arrived at, I am wholly indifferent whether the result is favourable to my views or not. "*Tenax propositi*" is and will remain my motto in the controversy, until I am convinced of my error; but if public judgment, founded upon a full knowledge of the merits on both sides, should be pronounced against me, I will not only cheerfully accept such decision, but very heartily thank my opponents for having cleared up the mystery and elucidated the truth.

After a lapse of two years, therefore, I, with the utmost confidence, repeat my denial, "That printing with movable types was preceded by engraving on wood;" and, further, I challenge literature to prove that a copy of the Block book known as the "Biblia Pauperum" was actually in any known library, public or private, prior to 1485, or known then to be in existence. I

should add that I reject as utterly false every copy of the Biblia which, on the face of it, purports to bear a date anterior to 1485, unless it fulfils the condition I have stated.

When those questions have been decided, it will then be time enough to proceed to the consideration of my declaration, viz., that to Albrecht Dürer is due the credit of having produced the "Block book."

I trust I am not violating any rule of propriety in expressing an earnest hope that Mr. H. Noel Humphreys and M. Berjeau, the best modern writers on the subject of early engraving and the Block books, will take the lead, —enter the lists,—and attempt to uphold the soundness of the theories enounced by them in their respective works, with which I am thoroughly acquainted, and the correctness whereof, so far at least as relates to the block books and early wood-engraving, I directly impugn; and I cheerfully accord them the aid of those distinguished authors on the Continent, who have devoted so much time and attention to the subject. I am content to fight the battle single-handed, and to fairly argue the subject in all its details.

In strict conformity, therefore, with the rules by which such matters are regulated, I now call upon the champions of the doctrine that "wood-engraving preceded printing with movable types," to come forth, and make good the truth of their assertions. HENRY F. HOLT.

IMPORTANT TO BUILDERS AND THE PUBLIC.

CAREER OF AN IMPOSTOR.

AT the Middlesex Sessions, on the 22nd inst. (before Sir W. H. Bodkin, Assistant-Judge), John Fordham Apps (*alias* Papps, *alias* Fordham), a tall, respectable-looking man, described as a commission agent, and of superior education, was indicted for obtaining by means of false pretences, from Thomas Hussey, of Kensington, builder, the sum of 20*l.*, with intent to defraud. There was a second indictment, for obtaining from George Gilham, of Old Kent-road, decorator, the sum of 15*l.*; a third indictment, for obtaining from James Charles Ring, of Peckham, builder, the sum of 10*l.*; a fourth indictment, for obtaining from Mr. Walton, of Bloomsbury, builder, the sum of 10*l.*; a fifth indictment, for obtaining from Messrs. Sansom & Yates, of Kennington, builders, the sum of 30*l.*; and a sixth indictment, for obtaining from Messrs. Corbett & McClymont, of the Redcliffe Estate, West Brompton, builders, the sum of 15*l.*, all with intent to defraud.

Mr. Montague Williams (instructed by Mr. Poncione, of 5, Raymond's-buildings, Gray's-inn, and Wood Green) prosecuted in all the cases; and Mr. Harris defended the prisoner.

The prosecution revealed an amount of artifice and persevering impudence almost without parallel, and the *modus operandi* appeared to be the same in all cases, and having selected some of the most wealthy builders in the metropolis, who had building works in operation, he went to the place of business or house of the builder selected, with his arm in a sling, and stated that on a particular night he had fallen over some timber, stone, or bricks, left carelessly about the works, and in one case he alleged he had fallen down a cellar, and having thereby broken his arm, he demanded compensation for the injuries he had sustained in consequence of the negligence of their servants. He pointed out the locality where the accident was said to have taken place, and having had a personal interview with the master builder, it was usually followed by a letter, and they are nearly duplicates of each other. One of these letters, sent to Messrs. Colls & Sons, builders, Camberwell, was as follows:—

"9, Robertson-street, Queen's-road, Battersea,
21st of October, 1870.

Gentlemen,—I beg to inform you that on Thursday night last, I fell over your stone, dangerously left in the public way, by the side of St. Philip's Church, Queen's-road, Battersea. On going direct to St. George's Hospital, I found I had broken my left arm. Mr. Rowland, the house-surgeon, set the bone. As I in no way contributed to the accident, either by neglect or want of caution on my own part, and as, in addition to pain, the injury entails loss, &c., I must hold you liable for damages for injury, caused solely by your servants' negligence in allowing so dangerous an obstruction in the public way without a light. If you desire a medical examination, I shall be happy to meet your surgeon with mine, by appointment.—I am, gentlemen, yours obediently, JOHN APPS.

To B. Colls & Sons, Builders, Camberwell."

Another letter, addressed to Mr. Gilham, from whom he claimed damages, was as follows:—

"50, Page's-walk, Grange-road, Bermondsey, Dec. 10.

Sir,—The gentleman you refer me to informs me he had nothing to do with the timber on the footway. As it is of that I complain, I must again inform you I hold you alone liable for the accident. In doing so, I wish you to understand I do not desire to make a property of the affair, but having sustained an injury of a serious nature that must incur loss and expense, I ask compensation for the same. If, therefore, you are disposed to meet me in the matter without prejudice, I am open to any fair proposal, and so amicably settle this unpleasant affair. If not, I must in justice to myself, though reluctantly, place the case in the hands of a solicitor, and await the result of a verdict from a jury. Thanking you for your sympathy as expressed in your note,—I am yours respectfully, J. PAPPS.

P.S.—I shall be at home to-morrow; or a reply appointing an interview will oblige."

In the case of Messrs. Corbett & M'Clymont he sent the following letter:—

"9, Robertson-street, Queen's-road, Battersea, Sept. 3.

Gentlemen,—I have to inform you that I fractured my arm on Monday night last by falling over your building material, dangerously left in the footway at your works, Finborough-road. I respectfully inform you I hold you liable, and in doing so beg to add I do not desire to make a profit from the circumstance, or to enter into litigation on the subject unless compelled, but having met with an injury that, in addition to pain, entails loss, expense, &c., and as I in no way contributed to the accident, either by neglect or want of caution on my own part, I must ask some compensation for injury caused solely by your servants. If, therefore, you are disposed to satisfy yourselves of particulars, and meet me in a spirit of fairness, I shall be happy to concur in any reasonable arrangement that may lead to an amicable settlement. Should you require a surgical examination I shall be pleased to meet your surgeon by appointment at my house, or at Dr. Leslie's, Queen's-road. I presume you know of the occurrence from your watchman, or Mr. H. Smith, your clerk of works.—I am, sirs, yours faithfully,
C. FORDHAM.

Messrs. Corbett & M'Clymont, 2A, Redcliffe-gardens, Fulham-road."

On the strength of this letter, he received 15*l.*, and from all the rest he received money under like representations; but on Mr. Hussey being applied to, he had his suspicions, and vigorous inquiries were instituted by Mr. Hamilton, Messrs. Colls & Sons' manager, which showed that the prisoner was only an impostor living upon these false representations. Accordingly, Mr. Hussey had a policeman ready at his house; and when the prisoner came to make his demand for the "injuries" he had sustained, a cheque was given him for 20*l.*, the prisoner giving a receipt for the money in full discharge of all claims. Before, however, the prisoner left the place the policeman made his appearance, and took him into custody, with the cheque in his possession. When he was in custody a great number of persons came forward to give evidence how they had been swindled by him in a similar manner; and Mr. Ring, one of the prosecutors, who had seen the prisoner write, proved that the whole of the letters produced were in the prisoner's handwriting.

Numerous witnesses were examined in proof of the facts stated, and other similar letters were put in evidence; and Dr. Rowland was also examined, and proved that the prisoner had actually attended at St. George's Hospital, complaining of great pain in his arm; but Dr. Rowland had great doubts at the time as to the genuineness of the case, and marked the entry in the hospital books with a query. It was part of the prisoner's adroitness to attend at the hospital so as to satisfy inquiries made by his intended victims; for, when he attended, he at the same time wrote letters to different parties, applying for compensation for alleged injuries, stating that he was then attending at St. George's Hospital with respect to the same, where inquiries might be made, and the prisoner appeared to display such cunning throughout these fraudulent transactions, that respectable builders were naturally taken off their guard, and were duped.

Mr. Harris made an ineffectual attempt at a defence, and the jury immediately found the prisoner guilty.

Mr. Montague Williams stated to the Court that it appeared, from inquiries made, that the prisoner, some years ago, had met with an accident to his arm, and that by rubbing and torturing the old wound he could make his arm appear injured, and had, in fact, for a length of time past been fraudulently trading upon the old injury, and victimising the public, and builders more especially.

The Judge, in passing sentence, said the prisoner had carried on these frauds with great artifice, and the sentence of the Court upon him was penal servitude for five years.

WEDNESBURY TOWN HALL COMPETITION.

SIR,—In your issue of the 12th instant it is objected that one of the firm of Loxton, Brothers (the successful competitors), was a member of the selecting committee.

Will Mr. Samuel Loxton, a member of the Local Board, answer for himself, and state whether he was or was not present at the committee meetings held to select the three premiated designs? If he was present, and not acting as one of the selecting committee, by what right and for what purpose was he there? Mr. Loxton's reply will, of course, satisfy any doubt that may still exist in the minds of many of the other competitors. AN INQUIRER.

SEWERS NOT RATEABLE.

THE METROPOLITAN BOARD OF WORKS, APPELLANTS, *v.* THE PARISH OF WEST HAM, RESPONDENTS.

THIS was a poor-rate appeal case, Court of Queen's Bench Westminster, before Mr. Justice Mellor, which raised the question whether sewers are rateable. The rate was made by the parish of West Ham on that portion of the sewers constructed by the Board, which lay within that parish, with the embankment belonging to it, together with some buildings pertaining to the works for raising the sewage. The parish, as to the latter, relied on the recent Greenwich case, in which the sewage works, consisting of houses, sheds, and engines, in that parish, were held rateable; and as to the sewers, it was urged that the land would be of value if the sewers were removed. On the other side, that case was distinguished on the ground of the present value of the buildings, &c.

The Court, after a full argument, determined that the sewer and the embankment belonging to it were not rateable, as being of no present possible value. No one would at this moment give anything for the sewers or the embankment, and the Board could make no profit by them; therefore there was no rateable value, at all events, as to the land covered by the sewers and the embankment. It might be that there was some appearance of inconsistency in holding the buildings containing the pumping-engines as rateable; but on the whole there appeared to be a distinction between the two cases, and therefore, in accordance with the former case, the buildings would be rateable, though not the sewers. Judgment for the appellants as to the sewers; rate upheld as to the buildings.

TENDER FOR THE SUPPLY OF GLASS-CASES AND PLATE-GLASS TO BE USED AT THE INTERNATIONAL EXHIBITION OF 1871.

SIR,—With reference to the letter from Mr. John Drew, on the subject of his tender for the above, which appeared in your impression of the 12th, I beg to inform you that although it is true that Mr. Drew's tender of 1,72[illegible]. 15*s.* included "not only the frames, but also the plate-glass and glazing," yet the same remark applies to all the other firms tendering, and the alteration would not affect the question of the relative amounts of their tenders.

The tenders should have been stated to be for "cases and frames complete, including glazing."

HENRY D. SCOTT, Lieut.-Col. R.E., Secretary.

PROVINCIAL.

Wareham.—The new town-hall and corn-exchange have been opened. In the outset the architectural duties were undertaken by Mr. G. R. Crickmay, of Weymouth, who has designed and carried out the construction of many public buildings in the same county; and with Messrs. Beer, Hobbs, & Best, of Wareham, was completed a contract for the work, according to Mr. Crickmay's plans and specifications, at the estimated cost of 1,332*l.* Mr. Charles Card was appointed clerk of the works. The total expenditure, including all the extras and incidental expenses which will be involved in the work, is now set down by the committee at 1,829*l.*, towards which 500*l.* have been borrowed. There remains a deficiency of about 100*l.* The building is situated at the corner of North and East streets. The front wall in each street is built with red bricks and Bath stone. The high-pitched roofs, springing from a stone corbelled cornice, are covered with green slates. A clock-turret, corbelled out at the angle formed by the two fronts, with moulded and enriched oak hoods above the main cornice, supported on stone-corbelled shafts protecting the two dial faces, with open framing for bell, and a high and tapering roof, forms a conspicuous and picturesque feature. Nearly the whole of the ground-floor is occupied by the corn-exchange, with entrance from North-street. A second entrance from East-street, opening into a lobby, will give access by a stone staircase to the suite of rooms on the first floor arranged as a town-hall, occupying the east front, a magistrates' room, and a large reading-room. The style of architecture adopted is Gothic.

CHURCH-BUILDING NEWS.

Walton.—A new church here has been consecrated. It has been erected on the site and foundations of St. Peter's Walton, near Clevedon, a church which had been in ruins for generations. The work was begun about eighteen months ago; and, in excavating the foundations of the nave and chancel, the old walls were traced and built upon. It was ascertained that the chancel belonged to the thirteenth-century style, while the nave was of the fifteenth century, and in the rebuilding the styles have been followed as before, so that the nave is a reproduction of the peculiar Somersetshire style of the fifteenth century, the chancel being of the lancet build, a couple of centuries older. The north aisle is divided from the nave by arches. The chancel has a chapel on the north side, forming an organ-chamber and vestry. The chancel roof is vaulted, painted blue, and ornamented with stars. The east window is a lofty triplet, with shafts of Purbeck marble, filled in with painted glass representing a variety of subjects designed by he rector of the church, the Rev. R. W. Hautenville. A considerable quantity of French stained glass of the thirteenth century has been used in this window. At the side of the chancel are two stained-glass windows, in memory of the late Rev. C. L. Cornish, vicar of Compton Dando, and whose remains lie in the churchyard. The floors of the aisle and nave are paved with Godwin's tiles. The outside of the building is of local stone, the inside arches and dressings being formed of alternate courses of Doulting and Bath stone. The inside of the building is lined entirely with magnesian limestone. The place is filled with open and free benches to accommodate about 300, and the total cost has been about 3,000*l.* The architect was Mr. J. Norton, of London; the builder, Mr. R. Newton, of Wraxall. The general carving was done by Mr. Margetson, of Bristol; and the figure carving by Mr. Bolton, of Cheltenham.

Hastings and St. Leonards.—The restoration of All Saints' Church has been carried out under

the advice of Mr. Butterfield, of London. Nothing but the shell of the former building remains. The dilapidated exterior was first taken in hand, by Messrs. Avis & Roe, of Silverhill, the contractors. It is, however, in the interior that the restoration has been most complete. The woodwork, tiling, and glass are new. In the chancel, the fittings, stalls, reading-desks, &c., are of oak wainscoting and walnut. The old chancel pews give place to the arrangement of putting the choir there. The floor of the communion is laid with Minton's tiles; and Maw's tesselated tiles are used in other parts of the flooring. The most noticeable change in the nave and aisles is the substitution of open seats for high pews. The font is removed some distance westward, nearer the tower. In relaying the floor at a lower level, opportunity was taken to fit in pipes for a system of heating by hot-water coil. Messrs. Alderton & Shrewsbury executed this part of the work. The main pipes to light the church with gas, have also been laid in. The ceiling of the nave has been removed, leaving the time-stained timbers exposed to view. The organ is placed at the east end of the south aisle. A new instrument ought to be added, at an early date. The belfry walls have now an even plaster surface; and the old groined roof has been brought out. The inconvenient vestry has been removed from its old corner; and a new vestry-room has been built outside the church, on the north side of the chancel.

Welham.—The works of repair and restoration at the church carried out during the last two years, having been completed, the re-opening has taken place. The chancel of the church has been restored in the Decorated style. The old nave roof, which was rotten, and of the date of the reign of Henry VII., has been removed, and an open-timbered roof substituted. The whole of the interior walls, which were covered with stucco and whitewash, have been repaired and painted. The old square pews have been removed, and new open seats of pitch pine substituted. The chancel floor has been paved with Whetstone's tiles, and the nave floor relaid with stone and Cranoe Keel Quarry tiles. The church is warmed by a Gill stove, supplied by Messrs. Hunt & Pickering, of Leicester. Stained glass has been added to the windows, and the east window restored.

Coningsby (Lincolnshire).—The restoration of this church is to be commenced immediately, under the supervision of Messrs. Hine & Son, Nottingham, architects. The builder is Mr. R. Young, of Lincoln, whose tender, 1,640*l*., is accepted for the work.

Over (near Wingford).—St. Chad's Church, Over, has been re-opened for divine service. The fabric of this parish church was, in the spring of 1868, examined by Mr. S. S. Teulon, architect, and he found the roof so much decayed as to be positively unsafe; so much so, that if any weight of snow had lodged upon it in the winter, the probability was that it would have given way. The church itself was disfigured by a low flat ceiling, heavy unsightly galleries, and by pews not only wasteful of space, but unsuitable for the proper observance of divine worship. The tower entrance at the west end of the church was blocked up, and entirely hidden from view by a vestry on the ground-floor, a gallery containing an organ, and above that a ringing-loft. The walls and pillars of the church were thickly coated with whitewash, and, though some of the windows had been restored, others were very much dilapidated. Now, however, through the liberality of the parishioners and their friends, this state of things has been entirely altered. The roof has been taken off and replaced by an open timber one, the rafters and beams being of polished oak. The galleries have been entirely removed, and the western arch and doorway have been opened. The walls have been cleared of the whitewash, and the red standstone of which the church is built is now revealed. Open varnished deal seats have been substituted for the old-fashioned pews, mostly free. In the south aisle is a new chancel organ by Bevington & Sons, of London, at a cost of 151*l*. The choir and chancel have been laid with encaustic tiles. The repairs to the external fabric are but few and insignificant. Where stone was found in bad condition it has been replaced, and some portions have been re-dressed. The restoration of the chancel was undertaken by the Ecclesiastical Commissioners, who placed the work in the hands of Mr. Ewan Christian, architect; and the remainder of the alterations have been defrayed by voluntary subscriptions; the architect being Mr. Teulon, and the contractor Mr. R. Beckett, of Hartford. About 1,600*l*. have already been expended, and 500*l*. more are required to complete the restoration of the north aisle, and for other alterations.

Nether Swell.—On the festival of SS. Simon and Jude a new chancel to the church of Nether Swell was consecrated by the bishop of this diocese. For the better accommodation of the increased population, eighteen years ago a new aisle, larger than the old church, was added on the north side of the nave, and the old church was re-pewed and repaired. To this new aisle has been annexed the new chancel, of which the chief promoter has been Mr. Alfred Sartoris, who has lately bought an estate, and built, in the Elizabethan style, a spacious mansion. The new chancel is Early English, and was designed by Mr. Christian, in harmony with the new aisle.

Hurworth.—All Saints' Church, Hurworth, has been reopened for divine service. The modern shallow chancel has been completely pulled down, and substituted by a chancel of three bays, erected with aisles on each side of two bays; that on the south side being occupied by the organ and vestry, and that on the north being fitted with seats. These aisles are separated from the chancel by clustered pillars, with boldly moulded bases and carved caps and support, moulded arches of three orders enclosed within label moulds with carved terminations. The arches, opening from the chancel and aisles into the nave and transepts, are similarly moulded, the carved capitals being supported by pillars of polished granite from Shap Fell, with cobbled-out bases of polished stone. The chancel roof is of the curved brace form, open to the apex, the timbers being all of pitch pine, moulded, covered by two thicknesses of boarding, with thick felt between, on which green Westmoreland slating is laid. The curved braces are supported by corbels with carved caps, moulded bases and shafts, also of Shap granite. The windows are all filled with geometrical tracery, and have moulded jambs and mullions, with small caps and bases introduced. The east window, which has been erected to the memory of the late rector by Mrs. Williamson, his widow, is filled with stained glass by Mr. Wailes, of Newcastle. Under the east window is a reredos the tracery moulded in Caen stone, supported by shafts of Irish marble, and the panels are filled with mosaic of Venetian enamel, executed by Salviati & Co., of Venice and London, from cartoons by the architect. The principal panels contain emblems of the Holy Trinity, the Holy Spirit, the Pelican and Agnus Dei, emblems of our Saviour, and emblems of the four Evangelists; the minor panels contain foliage of the Byzantine type peculiar to Venetian mosaic. A large part of the ground is of gold glass, and when the sun shines on it—but especially when the gas is lighted at night—the effect comes out. The window on the south of the sanctuary is the gift of Mr. Wrightson, and that on the north is from Miss Bales. The floor of the chancel is laid with mosaic and encaustic tiles. Passing under the chancel arch, we find the nave in keeping, but of a plainer character than the chancel. The ancient pillars have been stripped of their plaster, and restored. A new roof has been placed on the nave, of the original high pitch. The whole of the aisle floors are paved with mosaic tiles. All the old square high-backed pews are replaced by open stalls, with low slanting backs, and the windows have been all re-glazed with tinted glass, having coloured margins. The entrance has been restored to its original and proper place on the south side, the modern west door having been walled up, a window opened out above it, and the tower formed into a baptistery opening into the church by an arch of stone. The church is warmed by Haden's warm-air apparatus, assisted by one of Lewis's patent warm-air chamber-grates in the vestry. The whole of the works have been designed and carried out under the superintendence of Mr. Pritchett, of Darlington. The general contractor was Mr. G. Gradon, of Durham, who sublet the masonry to Mr. Foster, of that city; the slating to Messrs. Atkinson, of Darlington; the plumbing to Mr. Laidler, of Durham; the glazing to Mr. Wilson, of Leeds; the varnishing and colouring to Mr. Dryden, of Darlington. The artistic metal-work has been executed by Mr. Dovey, of Manchester; the mosaic flooring by Messrs. Maw & Co., of Broseley; and the carving by Messrs. Burtstall & Taylor, of Leeds.

Houghton Conquest.—The Church of All Saints, Houghton Conquest, to the east of the high road from Bedford to Ampthill, has been renovated under the direction of Mr. G. G. Scott. The works executed comprise the renovation of the oak roofs of the nave and aisles, 800 ft. of oak being required for this; the lead being recast and relaid in the best manner. The walls and buttresses have been underpinned, and where defective, rebuilt,—local sandstone, from the Dowager Countess Cowper's estate, being used for the walling, and Arcaster stone for the windows, doorways, and other dressings of the windows, all of which were partly built up; some have been entirely repaired and reglazed, some interesting fragments of stained glass being recovered. All the piers of the arcade have been underpinned. The whole area has been lowered to its original level, and reseated with oak fittings; the ancient open benches being repaired and refixed in the nave, those in the aisles being new, but made from the same design. The floors are repaved with tiles, the ancient monumental slabs being relaid in their original positions. The walls and stonework having been cleansed from the whitewash, many mural paintings were found. Over the chancel-arch is a Vesica Piscis,—Our Saviour is represented showing the sacred wounds,—the world and a rainbow under him; on his right an angel holding a cross and spear; on his left the same with pincers and nails. Over the north door is a figure of St. Christopher, 16 ft. high, crossing the water with the infant Saviour. In the south aisle is a representation of St. George and the Dragon, also many legends and texts, and the Belief. The porch, which is very dilapidated, has been rebuilt; a new oak roof, enriched with carving, has been fixed; the gable contains an elaborate niche, and the strings, labels, &c., carved. The modern fir doors have given place to oak, with artistic ironwork, and a wrought-iron screen has been placed in the tower archway. The organ is entirely new, and erected by Hill & Co., of London, under the direction of Mr. C. L. Higgins, of Turvey Abbey. The chancel has undergone a complete renovation; the oak roof is new, and in harmony with the east window, which latter had for years been blocked with brickwork, but has now been opened out, and the mullions and tracery restored; the side windows, which had suffered by similar treatment, have also been restored, and contain some curious fragments of ancient glass hidden for many years. The stalls and fittings have been reconstructed; the carving of the ends is interesting. The ancient screen, which had been greatly mutilated, has been retained and restored. The clerk of the works was Mr. T. Leigh, of London; the contractor, Mr. J. Fast, of Melton Mowbray. The carving was executed by Mr. S. Ruddock, of Pimlico, and the decoration of the screen by Messrs. Burlison & Grylls. The whole of the cost will exceed 3,000*l*. The addition of a considerable new portion on the north-east of the churchyard has been made and consecrated, the land having been given for the purpose by the Rev. Lord John Thynne, of Haynes Park.

Bramfield. — The church of Bramfield, or Braintfield, a parish historically interesting as the first charge of Thomas A'Becket, has been reopened for divine service, after having been closed, for restoration, during ten weeks. An addition has been built on the north side, forming an organ-chamber and vestry, and in the interior the gallery has been removed, and the old pews replaced by free and open seats of simple design. The chancel has been raised, and paved with encaustic tiles, as also the octagon room under the tower, which has been made a baptistery and furnished with a font. The whole cost of these and other improvements is estimated at 500*l*. The works have been carried out by Mr. Rayment, of Hertford, under the direction of Mr. C. B. Trollope, architect.

Swepstone.—The church, after the rebuilding of the chancel at the sole expense of the rector, the Rev. W. C. Hodgson, and the restoration of the nave and aisles by public subscription, has been opened for divine service. The church consists of chancel, nave, north and south aisles, tower, and south porch. The chancel is rebuilt in the style of the north aisle, about the year 1350. The tower was rebuilt in 1842, and the nave of the church seated with the present pews and benches. The rest of the church was left in a sad state of decay, and its restoration could not have been much longer delayed. When the rector had rebuilt the chancel, the parishioners, in vestry, willingly agreed that the restoration of the nave should be at once taken in hand

The chancel, which is fitted with temporary stalls, is separated from the nave by a low screen of Bath stone. There are encaustic tile pavements in the chancel, from Whetstone & Son, of Coalville. The east window, which is a memorial to the last rector and his wife, by the members of their family, consists of three lights, with two subjects in each light, the filling-up being in its character geometric. The centre subjects are the Resurrection and the Crucifixion. The subjects of the side lights are incidents in the life of St. Peter, to whom the church is dedicated. The window is the work of a young artist at Hull, of the name of Howe. The roof is of a very high pitch, of wagon-shape inside; the deal boarding is left for future painting. The walls are of ashlar; and there is a Gill stove, the flue of which passes underground along the nave to a flue in the tower. The organ, built by Gray & Davison, at a cost of 250*l*., occupies a recess on the north side of the chancel, the front being corbelled over the player's head, and is highly decorated. The frame is of oak, left in its natural state.

SCHOOL-BUILDING NEWS.

West Bromwich.—The new school in connexion with St. Michael's Roman Catholic Church has been opened. The school has been erected upon the site of the old one, at a cost of 500*l*., to be raised entirely by voluntary contributions, and will accommodate 200 children—nearly four times the number which the old building was capable of accommodating. It is a gable-ended building, with a plain exterior, constructed in the Early English style of architecture, of red, blue, and white bricks. There is a triple lancet window in the front gable, with stone dressings and diaper brickwork, and there are windows along one side of the building. The roof internally is of open timber, stained and varnished; and the walls, up to the level of the windows, are lined with glazed white bricks.

Maidstone.—The foundation-stone of the new Grammar School, which is to be erected on the Tonbridge-road, has been laid by Sir John Lubbock. The situation of the present school in Earl-street, a very unpleasant if not unhealthy neighbourhood, has for many years been regretted, and a desire has long been evinced to remove it to a more convenient site. The liberality of Mr. Peale led to this being accomplished, and the 1,200*l*. with which he headed the list was followed up by subscriptions to the amount of about 1,500*l*. The design for the new building was provided by Mr. E. W. Stephens. The style is late Gothic. The principal school-room will be 50 ft. by 25 ft., and will seat 180 scholars, but in reality has floor space for 150. Adjoining the school-room, and approached by the corridor, is a class-room, 19 ft. by 15 ft., which will accommodate a class of thirty-four scholars; and in addition to this there is another class-room, 30 ft. by 20 ft., which affords floor space for a further number of seventy-five boys. This latter room may be used also as a dining-hall for resident boys and day scholars. Besides this accommodation for boys, there is a large entrance lobby, a convenient lavatory, boarders' staircase, separate rooms for books, hats, and boots, and several other conveniences. The whole of the scholastic portion of the building is cut off from the master's residence. In the upper portion of the buildings, consisting of two floors, there is accommodation for twenty-four boarders, one room for under master, eight rooms for the master's own use, two infirmary wards for sick pupils, and a nurse's room. There is to be a bath-room on each floor, with lavatories and clothes store, &c. The whole extent of ground purchased by the trustees contains an area of 3½ acres; the school buildings, and master's house, and garden taking about three quarters of an acre. The playground is 1 acre, and the cricket-ground 1¾ acre in extent.

Ardwick.—The new schools in connexion with St. Thomas's Church, Ardwick, have been opened by the Bishop of Manchester. They will accommodate 550 children—300 infants and 250 boys; have been built at a cost, including the fittings and site, of 4,000*l*., and will comprise two school-rooms—the lower for the infants and the upper for the boys. The building is of brick, with stone facing, in the Gothic style of architecture. The rooms are of more than ordinary dimensions, and are well lighted and ventilated. Messrs. Royle & Bennett, of Manchester, were the architects, and Messrs. Clay & Son, of Audenshaw, the builders.

Upper Norwood.—New schools in connexion with St. Paul's Church, Upper Norwood, recently erected in Anerley-road, near the Crystal Palace, have been opened. The building, which will accommodate 250 children, consists of a school-room 51 ft. by 25 ft., two class-rooms, teacher's residence, and a soup-kitchen. The style is Gothic: malm facings, relieved with stone dressings, and red brick arches and bands. The school has an open-timbered roof, the height being 15 ft. to wall-plate. The architect is Mr. George Elkington, under whose superintendence the works have been executed by Mr. Hollidge, contractor, at an outlay of 1,200*l*., exclusive of site.

Red Hill (Surrey).—The opening of a school-room in the Brighton-road, Red Hill, Surrey, has recently taken place. It has been erected from the designs of Mr. John R. Collett, architect. Mr. James Hall, of Sutton, was the contractor; and the ornamental ironwork was executed by Mr. Anderson.

Felsted.—The new school-rooms which have just been erected in connexion with the Felsted Congregational Chapel, at the cost of about 325*l*. have been opened. The building, which is of timber construction, on concrete blocks, stands in the burial ground, and is contiguous to the chapel and minister's house. The main room is 55 ft. by 22 ft., with infant school-room 16 ft. by 15 ft., and two class-rooms, providing in all accommodation for about 300 children. The buildings are plain and unpretending, and have been erected by Messrs. Smith & Holland, builders, of Great Leighs, under the direction of Mr. Charles Pertwee, architect, Chelmsford.

Worcester.—A new infants' school has been opened in St. John's. The edifice, which has been erected under the superintendence of Mr. Perkins, architect of the cathedral, and Mr. Warner, builder, of Malvern Link, has been constructed upon a healthy site on the right hand side of the Bromyard-road, just beyond the toll-gate, and is therefore in close contiguity with the church itself. There is ample space around it in the shape of a playground, skirted by a dwarf wall. The school presents to the front a pointed gable with wings. The principal school-room is co-extensive with the frontage, namely, 48 ft., and the entrance is by a porch at the lower end. At the rear of this room there are two class-rooms, the dimensions of which are 20 ft. by 14 ft., the intermediate space being covered over and made available for a playground in wet weather. The height from the floor to the wall-plate is 14 ft., and to the top of the pointed roof in the centre about 35 ft.; behind the porch, which is 9 ft. by 7 ft., is a book-room, 7 ft. by 6 ft. The building is of brick, with white stone dressings.

Westerdale, Yorkshire.—A new school is to be erected in this parish. The designs have been prepared by Mr. H. Perkin, of Leeds, architect. The school will be of stone, with open-timbered roof, and will accommodate fifty children.

Matlock.—The new National Schools, intended for the use of the Sunday and day scholars in connexion with the parish church, have been opened. The estimated cost of their erection is 530*l*. of which the larger portion has already been raised. The schools are capable of affording accommodation for 200 children. The architects were Messrs. Hine & Son, of Nottingham; and the builder Mr. W. Statham, of Matlock.

Walkley.—The corner stone of the St. Mary's National Schools, Walkley, has been laid. The schools, the site of which adjoins the church, will be built in the shape of the letter H, and in the Gothic style of architecture. The boys' school, at the one end, will be 45 ft. 6 in. by 20 ft.; and the infants' school, at the other end, will be 48 ft. by 20 ft. In the centre will be the girls' school, 38 ft. by 20 ft., and a class-room, 12 ft. by 20 ft., with entrance-porches, passage, &c. The height of the schools inside will be about 26 ft. Mr. Thomas A. Wilson is the architect, and Mr. John Wilson the contractor. The contract for the erection of the schools amounted to a little over 1,500*l*. The boys' school will accommodate 100, the girls' school 80, and the infants' school 120 scholars.

The Proposed New Harbour, Folkestone.—The plans for the proposed harbour are on view at the townhall. Two schemes are submitted, one of which is estimated to cost 150,000*l*. and the other 200,000*l*. The latter has an additional length of 200 ft.

Miscellanea.

Want of Elasticity in Portland Cement. Speaking of the repeated failure of large civil engineering works, such as breakwaters, docks, walls, &c., due indirectly, beyond question, to the want of elasticity—in other words, to the brittleness—of cement, the *Engineer* says,—As an illustration of the nature of strains to which works of this kind are submitted, we may cite the case of the splendid breakwater at Holyhead, now fast approaching completion. Under the full force of a heavy westerly gale rolling in a tremendous sea, the work rocks and vibrates to an extent which can only be realised by those who have stood on the wall inside the parapet at the time; and in direct confirmation of what we have said, we may state that mortar made of good Aberthaw lime has been found to sustain the shocks of the wind and the sea better than Portland cement of the best quality, apparently because the lime mortar possesses more elasticity than the cement. Other instances might be cited, all tending to prove that however suitable Portland cement is for such works as the main sewers of the metropolis, the piers of a bridge, or the Thames Embankment, it is not uniformly the best material that can be used for engine foundations, breakwaters, or other structures exposed to violent dynamical strains. Whether it is or is not possible to impart elasticity to Portland cement remains to be seen. It is certain that unless it possesses some elasticity, it is unlike all other known materials; but if it possesses some elasticity, different samples may possess more or less of the quality. Engineers have now to find out what kind of cement possesses most elasticity, and how far a high tensile strength and great elasticity are compatible with each other.

Arbitration.—The case of Brazier *v.* Askew, where the plaintiff, Mr. Wm. Brazier, claimed compensation for damage to property at Parkgate, Sheffield, alleged to have been caused by the coal-mining operations of Messrs. T. and H. Askew, referred to Mr. J. E. Barker, barrister, was heard by him at Rotherham, and occupied three days. The principal witnesses for the plaintiff were Mr. Dobb, architect, Rotherham; Mr. G. W. Wilson, architect, Sheffield; Mr. P. Cooper, colliery manager, The Holmes; and Mr. Wilson, of Darfield. Solicitor, Mr. Harrop, of Rotherham. The case for the defendants was that the damage was not the result of the coal getting, but of the defective construction of the property. The witnesses for the defendants were Mr. W. Blackmoor, architect, Rotherham; Mr. C. J. Innocent, architect, Sheffield; Mr. B. Sellars, coal-owner, The Haigh; Mr. Beecher, mining engineer, Thorncliffe; and Mr. B. Sellars, jun., mining engineer. Solicitor, Mr. Whitfield, of Rotherham. After taking time to consider the evidence, and having viewed the premises, the arbitrator has made his award in favour of the defendants, all costs to be paid by the plaintiff.

Rain.—In a lecture at Norwich last week Mr. James Glaisher, F.R.S., said:—"The whole of the rain had its origin and fall 800 ft. from the earth. Desiring to discover the influence of the moon on the elements, he took observations, and discovered, after a long series of observations, that on the 9th day of the moon there was much the most rain, and that on the first and last week of the moon there was the least amount. He had taken account from 1815 to 1869 of every day on which there had been an inch of rainfall, and he had found that on July 26th, 1867, the rainfall amounted to 3 in. 7-10ths—the largest amount that had fallen in one day at the Royal Observatory. From careful observation he had made he had no doubt that the moon did exercise an influence upon rain. Another investigation that he made was as to the time of day that rain fell most, and he had found that the largest quantity of rain fell at about four o'clock in the afternoon.

Billingsgate and Leadenhall Markets.—In accordance with the decision of the Court of Common Council, on Thursday last, to enlarge and improve these important City markets, Mr. Corrie, the Remembrancer, has given notice on behalf of the corporation of their intention to apply to Parliament for authority to carry out the necessary works. In the case of Leadenhall Market the sale of meat, skins, and hides is sought to be prohibited, and the land so rendered useless in that direction will be utilised in the enlargement of the poultry market.

Australian Meat.—The cheap food question, in its connexion with the importation of meat from Australia, so largely dealt with last winter, has again been opened up at the Norton Folgate agency for colonial produce, in a meeting of medical officers of health for different parts of London, who were called upon to pronounce an opinion with regard to the wholesome character of the food. Among those present were Dr. Lankester and Dr. Hardwicke, the coroner and deputy-coroner, Dr. Aldis, Dr. Septimus Gibbon, Dr. Letheby, the Rev. Septimus Hansard, and many other gentlemen well known as taking an interest in the social progress of the people. The meats were served to the company by Mr. Tallerman, in the condition in which they are being served to the people in "Penny Dinners," namely, cooked with vegetables or with barley, as mutton-broth prepared Scotch fashion, pea-soup, rice-soup, and the *entrées* were mince collops, haricot mutton, fried ham, sausages, meat and rice, meat pies and puddings. Many of these dishes were retailed at 2d., and some at a penny, affording a good wholesome dinner, with dining accommodation in a spacious hall, at a very low price. The highest price charged for a dinner in the reserved seats, the dinner consisting of soup, *entrée*, vegetable, and bread, is 5d., and six dinners are supplied on consecutive days for an abatement of 3d. on the week. The dinners as served were pronounced to be excellent, and the large company voted Mr. Tallerman thanks for his efforts. Complaints have been made that some of the salted meats are unnecessarily salt. This seems to be the case with spiced and rolled beef and mutton, which, however, are very tasty, though, of course, several months old, and give a good relish to fresher forms of food.

Exhibition for the Distressed Peasantry of France.—An exhibition of pictures is being formed, and is about to be opened, at the French Gallery, for the benefit of the peasantry of France, described as being in a fearful state of distress. Baron Gudin, the eminent French marine painter, has been especially active in arranging the undertaking; and amongst the artists who have already promised to contribute to the exhibition may be mentioned Messrs H. B. W. Davis; J. L. Jérôme; A. Elmore, R.A.; P. H. Calderon, R.A.; W. P. Frith, R.A.; R. Fleury; C. F. Daubigny; E. Long; G. P. Boyce; T. S. Cooper, R.A.; J. B. Burgess; H. Hardy; E. Crowe; A. Gilbert; H. Dawson; Theodore Weber; J. E. Saintin; A. Perrault; Baron Gudin; L. Escosura; F. Heilbuth; G. Ruard; A. Yvon; H. Delissard; W. Q. Orchardson, A.R.A.; A. Schreyer; H. Schlessinger; Birket Foster; A. Bouvier; I. Webb; F. W. Hulme; G. F. Tenniswood; Lady Cadogan; J. D. Watson; J. R. Dicksee; J. Burr; A. Ruinart; A. Tadema; Ludovici; E. Armitage, A.R.A. The presentation of pictures, drawings, and other works of art is invited.

The New Mint.—There are signs at last that the new Mint, as well as the new Law Courts, elsewhere noticed, are to be proceeded with. Parliament will be asked next session to authorise the erection of a new Mint, on a site facing the Embankment. The site fixed on is on the City side of the Temple-gardens, in a part of the Embankment which greatly needs adornment. The first thing seen on entering the Embankment road from the City is the City Gas Works, the thing most out of place in all this incongruous metropolis. The site chosen for the new mint is next to the gas-works. It is now covered with wharfs and buildings which are fit company for their smoky neighbour. How a new public building will look with the smoke of the retorts beating against it, and the huge gas reservoirs threatening it with destruction, it is impossible to guess. It is to be hoped the selection of the site indicates the removal of the gas-works.

Royal Commission on Pollution of Rivers.—Major-General Sir William Denison, K.C.B., Dr. Edward Frankland, F.R.S., Mr. John Chalmers Morton, and Mr. S. J. Smith (secretary), having completed their inquiries and investigations into the river basins of Scotland polluted by town sewage and refuse from manufactories; also the basins of the Aire and Calder, Lower Avon, Windrush, and the upper parts of the Severn, river basins extensively polluted by woollen manufactures and the processes connected therewith, met at No. 1, Park-prospect, Westminster, for the purpose of considering their reports.

Paving by a Driver.—Mr. Charles Pinnington, of 9, St. James's-terrace, Caledonian-road, who states that he has "been employed for the last forty years in driving a conveyance through London and the suburbs, averaging 70 miles a day," and has much meditated on the defects of various modes of paving, has at last taken out Royal Letters Patent for a new mode, which consists of laying granite or other stone blocks on wood in two transverse layers, bedded on a mixture of sawdust and unboiled coal-tar, resting on the sand or other subsoil; so forming an elastic basis for the stone blocks, through which boiled or boiling tar is to be poured, followed up by sand, thus rendering the whole water-proof, to which a coating of tar over the wood before it is laid contributes. Noise, he considers, would be diminished, the granite saved, and the paving be both cheap and lasting, as well as merciful to his beloved horses.

Courts of Justice.—Notice is given that application is intended to be made to Parliament in the ensuing session for an Act to authorise the Commissioners of her Majesty's Works and Public Buildings to acquire and take, by compulsion or agreement, additional property, for the site of the Courts of Justice, in the parish of St. Clement Danes, and for other purposes connected with the proposed Courts of Justice. The large block of buildings which the commissioners propose to take is that which commences at Clement's-inn gateway on the east, extending to Dane's-inn on the west. Northward, the block is bounded by Clement's-inn Hall, and southward by the Strand. It contains, in addition to the hall, several large houses, amongst others, Carr's Hotel, Tuxford's printing-office, the Vestry-hall, and a long row of houses in Clement's-inn. It is not stated what is the precise object to which the new site is to be applied. There are no signs of the Courts being commenced.

Progress of Tramways.—The Metropolitan Street Tramways Company intend applying next month to the Board of Trade for provisional orders for extensions of their lines, including an extension from the Kennington Park-road to the Borough. In Princes-street, City, on the east or Bank of England side, a line is proposed throughout the entire length of the street; also on the south side of Cannon-street, between Dowgate-hill and College-hill. A line is also proposed along the Southwark Bridge-road to Queen-street, City, between Upper Thames-street and Cannon-street. Mr. Jackson, who has made some suggestions as to the construction of tramways, now advocates the making of a new road from the corner of Mansion House-street, in the Kennington Park-road, to St. George's-circus, in the Blackfriars-road.

Fall of a Tower.—The tower of the church of East Rudham, which had long been in a dilapidated state, has given way, a great part of the west and north walls falling to the ground, the lower portion being used as a vestry: the *débris* covered up all therein,—parish chest, register, lamps, tables, &c. Fortunately, however, the fall did not occur during divine service. The bells were left hanging with no means of access, the circular staircase having fallen with the rest. Being uninjured and valuable, however, an effort was made to save them, and they were safely landed by Mr. R. M. Lane, of this place, engineer. The church, which is in the Decorated style, and dates about the end of the thirteenth century, is also considered in a dangerous state, and divine service has been discontinued therein.

Electro-Telegraphic Progress.—Sir Chas. Wheatstone has just added to his many electrical inventions the completion of a printing instrument. This resembles a piano, having a key-board of twenty-five notes, each answering to a letter in the alphabet, several of which can be used for stops and numbers. The most frequently-occurring letters are situated towards the centre, so that an operator need rarely move his hands from one position. Great speed is thus obtained; and, if necessary, a printed copy of the forwarded message can be had by the sender of a message.

Dwellings for the Working Classes, Pimlico.—"Coleshill Buildings," in Ebury-street, erected for the Improved Industrial Dwellings Company, were opened on the 18th inst. by the Duke of Cambridge, in presence of a distinguished company. We will give some particulars of the buildings in our next number.

Wolverhampton New Town-Hall: Dinner to the Workmen.—The workmen employed under Mr. Horsman, the contractor in the erection of the Wolverhampton New Town-Hall, in North-street, having succeeded in completing the timber supports for the roofing in of the main building, the event was celebrated with the usual ceremony of hoisting a Royal standard on the summit of the dome, followed in the afternoon by an excellent dinner, which was given by the Public Works Committees to the whole of the men employed on the work. The north wing of the new buildings (intended for the use of the police force) is already completed, and has been for some time past used by the officials of the corporation, and by the corporation committees. In the principal room, the mayor (as chairman of the Public Works Committee) presided, supported by Mr. Horsman, contractor, &c., and faced in the vice-chair by Mr. Whiston, clerk of the works.

Instruction in Science and Art for Women.—The course, or rather courses, of instruction in science and art for women, conducted in the Lecture Theatre of the South Kensington Museum, continue to be well attended. Professor Huxley, in his series of lectures in the elementary course, has had in his class upwards of 200 ladies. Having in his previous lectures physiographically described the rise and progress, so to speak, of the Thames and its basin under the action of rain and pluvial denudation, he proceeded to illustrate his subject still further by showing the effects both of pluvial and of marine denudation in the river's estuary, along the seashore, and outwards into the depths of the ocean. Professor Guthrie, in his advanced course of instruction, has also had fair audiences in more senses than one. He has been enlightening the ladies on the subject of heat, light, and other branches of physics.

The Leicester Industrial Provident Society.—This is a co-operative society, which began ten years since with almost nothing, and after the necessary time and difficulties of incubation, is now rising rapidly, and doing business to the extent of between 30,000*l.* and 40,000*l.* a year; and at the recent rate of progress, will, ere long, be doubled. It is entirely under the management of the working classes. The number of members in July, 1870, was 1,409; in October, 1870, it was 1,697; giving an increase of 288 members in three months. The society has eight branches in Leicester, besides the central stores. The members, and non-members, besides good articles of supply at cheap rates, for ready money, reap considerable profit otherwise from their connexion with the society.

The Strike in Edinburgh.—The Lord Provost of Edinburgh, who had consented to act as arbiter in the stonemasons' strike, gave his decision on Monday as follows:—"The Lord Provost, having carefully considered the statements submitted to him on Saturday last by the master masons and also by the men in their employment, is of opinion that the most equitable decision he can come to is to halve the difference between the parties, and he therefore so decides." The masters and men agreed to abide by his lordship's decision, and the strike has accordingly terminated. The men will now be paid at the rate of 6½d. per hour instead of 6½d.

East London Museum.—It will be remembered that the Duke of Buckingham, during his tenure of office as Lord President of the Council, obtained the sanction of her Majesty's Government for establishing a museum in the east of London as a national institution, and he authorised the appropriation of part of the temporary structure at South Kensington to be made over as a skeleton for the new building. The Society of Arts made a donation of 100*l.* towards the same object. The building is now fast approaching completion, and will, it is believed, be opened in the course of next year.

Infirmary, Basford Union.—The guardians of this union have just completed their new erections, consisting of an infirmary for 131 beds; infectious ward, 10 beds; probationary and itch wards, porter's lodge, clothes stores, and some additions to the old premises. The infirmary is said to be provided with all modern and useful appliances for promoting the welfare of the patients and economising labour. The architect was Mr. S. J. Barber, of Eastwood, Notts; and the contractor Mr. G. Hopewell, of Basford.

The Improvement of Park-lane.—At the last meeting of the Metropolitan Board of Works, a letter from the Government Board of Works was read, informing the Board that a sum of 45,000*l.* had been placed in trustees' hands to aid in the widening of Park-lane, by Mrs. Brown, of Hertford-street, May Fair, on condition that the Metropolitan Board should adopt that course instead of opening out a new street through the gardens of Hamilton-place, thus destroying so much of Hyde Park. The Metropolitan Board rejected an amendment declining the offer, and deferred the matter to their Works and General Purposes Committee for consideration and report.

Arbitrators' Awards. — The question whether an arbitrator could alter his award after he had signed it, even in the case of a palpable mistake, has been raised in the case of Mordue *v.* Palmer, an appeal which was heard before the Lords Justices in London. In this case the arbitrator's clerk had omitted in the fair copy of the award the words relating to the costs of the reference which were in the original draft. Their lordships agreed that the result of the cases decided at law was, that when an arbitrator had signed a paper which on the face of it purported to be his award, he was *functus officio*, and could not make any alteration in it.

New Library and Museum at Brighton. A meeting of the East Sussex District of the South-eastern Branch of this society was made the occasion of inaugurating the new library and museum, recently constructed to the east of the hospital, after plans by Mr. Edmund Scott, a local architect. This building has an Italian elevation, and contains, besides two commodious rooms devoted to the above purposes, some contiguous offices, as dissecting-room, &c., which are necessary adjuncts to them.

Four Persons Suffocated by Gas.—In Moor Crescent-road, Leeds, owing to an escape of gas from the mains in the streets adjoining Dewsbury-road, Holbeck, four persons resident in two adjoining houses have been killed in their bedrooms, and two others were found almost dead. It appears that there had been something the matter with the mains in the street for a little time past, and it is supposed that the gas escaping from the main pipe had gone through the earth, and found an outlet in the houses of the unfortunate deceased.

The School Board.—More than 140 candidates have been nominated for the Metropolis School Board. The Board will consist of forty-nine members; so that there is, as nearly as possible, an average of three candidates for every seat. The list on which the voting will take place is, however, not quite settled yet, and some reduction in the number may be anticipated.

Northern Architectural Students' Society.—At the first business meeting of the winter session, held at the Literary and Philosophical Society's Rooms, Newcastle, Mr. Matthew Reed, jun., read an account of Ryton Church, county of Durham; and of Belsay Castle, county of Northumberland, descriptive of original sketches of those buildings submitted by him to the meeting.

Polytechnic Institution.—Professor Pepper's new entertainment, descriptive of the war and the destructive implements used in it, is alike interesting and instructive,—the best thing done at the Polytechnic for some time past. Including, as it does, some excellent pictorial and musical illustrations, with the national war-songs, of course, it holds the audience for a couple of hours without desire to move.

Indian Antiquities.—It is stated that General Cunningham, late of the Bombay Engineers, has been appointed Surveyor-General of the Archæological Survey of India, with orders to proceed to India immediately and organise on an extended scale the operations for the preservation of Indian architecture, which have been already initiated by the Government of India.

A Cottage Hospital for Devizes.—At a meeting held in Devizes, it has been resolved that it is advisable to establish a cottage hospital there. There was a full attendance, and donations and subscriptions to the extent of nearly 400*l.* were at once announced. A committee has been appointed.

Manchester and Salford Sanitary Association.—The opening address of the present winter's course of lectures under the auspices of this Association, has been delivered in the Hulme Townhall, by Mr. Thomas Turner, F.R.C.S. The subject was—"Human life in its physical and sanitary relations."

Knightsbridge Barracks.—We are glad to find that notice has been given that next session the Treasury will seek the requisite powers to remove the barracks from Knightsbridge, and a site for their re-erection in the parish of St. Margaret, Westminster, is named.

Institution of Surveyors.—At the next meeting, to be held on Monday evening, the 28th of November, Mr. E. Ryde will continue his paper of last session on "Parochial Assessments (Railways)."

The Tunnel through Mont Cenis.—The Mont Cenis Tunnel is advancing to completion. Next month is really expected to witness the virtual consummation of this work.

TENDERS.

For the finishings to six houses at Acton, for Messrs Hensman & Nicholson, solicitors. Messrs. W. Waymouth & Son, architects:—

Macey	£3,269 0 0
Merritt & Ashby	2,699 0 0
Foster	2,651 0 0
Preedy & Sons (accepted)	2,230 0 0

For alterations to three shops, for Mr. Kingbury, 95, Fulham-road:—

Taylor	£564 0 0
Ball	529 0 0
Carmody	499 0 0
Kelly, Bros.	473 0 0
D. Taylor (accepted)	424 0 0

For schoolroom for parish of Chaldon, Surrey. Mr. Richard Martin, architect. Quantities not supplied:—

Jarrett	£218 0 0
Barnes	205 0 0
Ward	194 0 0
Francis	192 10 0

For erection of house and shop for Mr. James Gutteridge, Coalville, near Whitwick, Leicester. Mr. J. Salisbury, architect:—

Mills	£536 10 0
Crane	514 0 0
Price	498 0 0
Hallam, jun.	496 0 0
Cox	302 2 4

For repairs and alterations, new conservatory, &c., at Bramley House, Bramley; also, new lodge; for Mr. A Clarke. Mr. A. Peebles, architect:—

	Alterations, Repairs, New Conservatory, &c.	New Lodge.
Moon	£4,077	£411
Barnett & Whichelow	4,050	210
Henshaw	3,995	368
Nye	3,994	409
Scrivener & White	3,975	369
Newman & Mann	3,936	356
Wilson	3,789	414
Nightingale	3,710	382
Mitchell	3,578	398
Crabb & Vaughan	3,554	419
Moultrie	3,544	370
King & Sons	3,446	400
Ebbs & Sons	3,436	346
Longmire & Burge	3,434	355
M'Lachlan	3,393	363
Earle	3,384	395
Perkins	3,321	361
Nash & Co.	2,958	320

[Some of the above were too late.]

For Wellington College Sanatorium:—

Wheeler, Bros.	£990 0 0
Higgs	982 14 0
Woodroffe	950 0 0
Norris	948 0 0
Shepard	917 0 0
Nightingale	898 0 0
Clealand	685 0 0

For alterations and a new plate-glass front, &c., at the Gloster Arms Inn, Ship-street, Brighton. Mr. Geo. Tuppen, architect:—

Garrett	£215 0 0
Bowles	210 0 0
Dean	198 0 0
Lockyer	195 0 0
Lancester	170 0 0

For the erection of a villa residence on the Clermont Estate, Brighton, for Mr. W. H. Hunt. Quantities supplied. Mr. Geo. Tuppen, architect:—

Patching & Son	£1,170 0 0
Barnes	1,147 0 0
Dancy	1,096 0 0
Newnham	1,089 0 0
Hall	1,037 0 0
Lancester	1,035 0 0
Stenning	1,026 0 0
Dean	1,014 0 0
Chessman & Co.	995 0 0
Holloway & Son	970 0 0
Lockyer	955 0 0
Miles (accepted)	850 0 0

For the erection of a Wesleyan Methodist Chapel, Horseferry-road, Westminster. Messrs. Wilson & Willcox, architects. Quantities supplied by Messrs. Corderey & Co.:—

Bayes & Ramidge	£8,288 0 0
Carter & Son	7,825 0 0
Nightingale	7,593 0 0
Nutt & Co.	7,582 0 0
Hill, Keddell, & Waldram	7,570 0 0
Niblett & Co.	7,553 0 0
Colls & Sons	7,459 0 0
Higgs	7,443 0 0
Longmire & Burge	7,320 0 0
Hobson	7,215 0 0
Henshaw	6,983 0 0
Manley & Rogers	6,853 0 0
Myers & Sons	6,691 0 0
Cullum (accepted)	6,682 0 0

For house, &c., for Mr. J. Harrison, Dresden, near Longton. Messrs. R. Scrivener & Son, architects:—

Inskip	£1,060 0 0
Harvey & Co.	999 0 0
J. Harvey	995 0 0
Collis & Hudson (accepted)	840 0 0

For heating china manufactory by steam, for Mr. C. Ford, Hanley. Messrs. R. Scrivener & Son, architects:—

Boulton (accepted)	£272 10 0

For alterations and additions to house at Teddington Weir, for Mr. T. L. Wilson. Mr. H. T. Sugden, architect:—

Howard	£225 15 0
Perkins	225 0 0
Tod & Saunders	196 0 0
Hurst	185 0 0

For alterations and repairs to house, Brighton-terrace, Buckhurst-hill, for the London and Westminster Building Society. Messrs. Berriman & Son, architects:—

Purfett	£148 0 0
Perkins	113 0 0
Gibbs	109 0 0
Fisher	109 0 0

For the erection of an Athenæum, Camden-road. First contract, for the hall. Mr. F. R. Meeson, architect. Quantities by Mr. French:—

Carter	£2,490 0 0
Ingram	2,391 0 0
Barber & Groome	2,339 0 0
Webber	2,169 0 0
Heath	2,059 0 0
Newman & Mann	2,035 0 0
Niblett & Son	1,950 0 0
Goodman	1,919 0 0
Sharpington & Cole	1,897 0 0
Mann	1,893 0 0
Wright, Bros. & Goodchild	1,875 0 0
Waterson & Co.	1,865 0 0
Crockett	1,790 0 0
Scrivener & White	1,787 0 0
Till	1,775 0 0
Langmead & Way	1,730 0 0
Bleuse	1,693 0 0
Parsons & Telling	1,683 0 0
Gregory & Knight	1,677 0 0
Wood	1,675 0 0
Gough & Lawton	1,679 0 0

TO CORRESPONDENTS.

C. P.—C. B.—C. B. A.—A. S.—C.—W. S.—H. H. S.—J. R.—Planken.—H. P.—H. F. H.—G. F. T.—J. W.—A. M.—H. P. H.—R. M. B.—E. S—M. B.—J. D.—E. I'A.—F.R.I.B.A.—J. A. P. L.—R. M.—B.—F. T. M.—T. C.—Constant Reader.—J.—H. J. B.—W. A. D.—Another Competitor.—W. C.—G. T.—R. Q.—Mr. P.—J. D. W.—W. J. D.—*Multum in Parvo.*—W. B.—One of the Mob of Masons.—Cymry (the roads named are of Val de Travers asphalte, in the hands of a company).—S. & A. (Is the front of stone?)

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of Tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO SUBSCRIBERS.

The Publisher cannot be responsible for TESTIMONIALS *left at the Office in reply to Advertisements, and strongly recommends that* COPIES ONLY *should be sent.*

Advertisements cannot be received for the current week's issue later than **THREE o'clock, p.m.**, *on THURSDAY.*

☞ *NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent Garden. All other Communications should be addressed to the "Editor," and* NOT *to the "Publisher."*

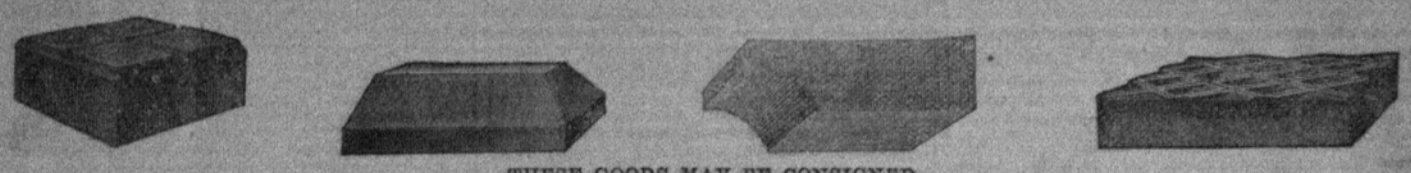
SPECIAL NOTICE.

In consequence of the Reduction in the Newspaper Postage, Subscribers within the United Kingdom will be supplied with THE BUILDER *direct from the Office, at the rate of Nineteen Shillings per annum,* PAYABLE IN ADVANCE.

DOULTON & CO.

HAVING EXTENSIVE WORKS IN
LAMBETH, the MIDLAND DISTRICT, and the NORTH, can ECONOMISE the Cost of Carriage,
And are thus able to Supply their various Manufactures at the Lowest possible Prices
In any Part of the Kingdom; and can also export from London, Liverpool, or Gloucester.

BLUE STAFFORDSHIRE WARE.

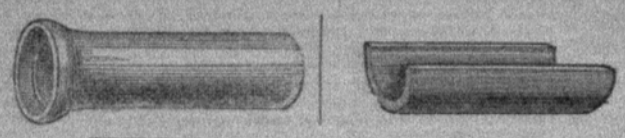


THESE GOODS MAY BE CONSIGNED
DIRECT to ANY PART of the COUNTRY, put into BOATS at the WORKS at Rowley, or into TRUCKS at the RAILWAY STATIONS adjoining.

MAY BE HAD IN LONDON, at their WHARFS at
LAMBETH, OR CROWN WHARF, VICTORIA PARK, E.
Or may be sent by Rail direct to ST. PANCRAS, CAMDEN, or PADDINGTON STATIONS; also at
GRANVILLE WHARF, BIRMINGHAM; and SOHO STREET, LIVERPOOL.

DOULTON'S STONEWARE PIPES.

PIPES FOR DRAINAGE,
From 2 in. to 30 in. in diameter.



CARRIERS FOR SEWAGE, &c.
With or without Sockets.

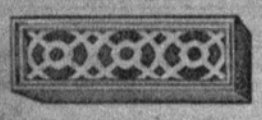
DOULTON'S ARCHITECTURAL TERRA COTTA.

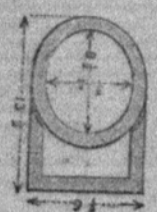
Messrs. DOULTON & CO. are now paying special attention to this branch of their Manufacture, and invite Architects and Builders to view their STOCK at LAMBETH. Specimens also on view at the Crystal Palace; and at the Architectural Museum, Conduit-street, W.

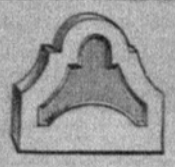
TERRA-COTTA of EVERY KIND MANUFACTURED by DOULTON & CO.

COMBINED SMOKE AND AIR FLUE.
CHIMNEY PARTITION.
WALL COPINGS.

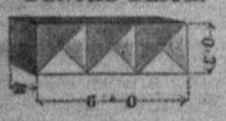
AIR BRICK.



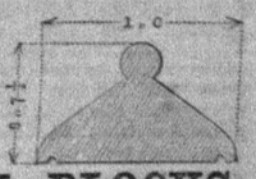




DENTAL BRICK.



STONEWARE SINK.



DOULTON'S PATENT INVERT AND JUNCTION BLOCKS,
And IMPROVED STREET and YARD GULLIES.

DUTCH TILES; RED, BLUE, and BUFF PAVING TILES; AIR BRICKS; DAMP PROOF COURSE, &c.

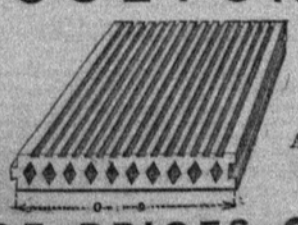
STONEWARE SINKS, highly Glazed, of great Strength, Incorrosive and Non-absorbent.

ALL KINDS OF SANITARY WARE.

Fire-clay Goods of all kinds. Plumbago and other Crucibles.

All descriptions of GENERAL STONEWARE, CHEMICAL APPARATUS, FILTERS, AIR-TIGHT JARS, BOTTLES, &c. for Exportation.

DOULTON'S
IMPROVED DAMP PROOF COURSE.



SEE SEPARATE ADVERTISEMENT.

SEPARATE LISTS OF PRICES ON APPLICATION.

TURNER & ALLEN,

ART FOUNDERS AND ENGINEERS,

201, UPPER THAMES STREET, LONDON, E.C.

MANUFACTURERS OF

LAMP PILLARS, GAS LAMPS, FOUNTAINS, GATES, RAILING, ETC.

Either Plain or Bronzed, in the Highest Style of Art.

HOT-WATER AND GAS ENGINEERS.

Sole Importers of BARBEZÂT'S FRENCH IRONWORK, and Publishers of French and English Books of Design, 2 vols. Price 25s.

Just Published, price 2s.

THE REPORT of the SEWAGE COMMITTEE of the TOTTENHAM LOCAL BOARD of HEALTH on the DISPOSAL of the SEWAGE of their District.
Edited by F. P. MARSHALL, C.E. Surveyor to the Board.
E. & F. N. SPON, 48, Charing-cross.

SOCIETY of ANTIQUARIES of LONDON.—VETUSTA MONUMENTA.
The following portions of Vol. VI. are now published, and may be had at the Society's Apartments at Somerset House, or through any Bookseller:—
1. Three Plates of the CHAIR of St. PETER, preserved at Rome; with Letterpress by the late A. ASHPITEL, Esq. F.S.A. and A. NESBITT, Esq. F.S.A. Fol. 1870. Price 9s. 6d.; to Fellows, 6s.
2. Four Plates in Chromolithography, reproducing Illuminated Pages of Ancient Irish MSS. with Letterpress by the late Rev. J. H. TODD, D.D. F.S.A. Fol. 1870. Price 16s.; to Fellows, 10s.

Bound in cloth, 1s. 6d. or post free for 20 stamps.

STABLES and STABLE FITTINGS.
"Includes a considerable amount of useful information on the subjects of which it treats."—*Builder*, August 27, 1870.
ST. PANCRAS IRON WORK COMPANY, Old Saint Pancras-road, London, N.W.

THE ART JOURNAL
For DECEMBER (price 2s. 6d.) contains the following LINE ENGRAVINGS:
I. THE CHURCH AT BEITWS-Y-COED, after T. Creswick, R.A.
II. THE MIRACLE OF ST. MARK, after Il Tintoretto.
III. THE GENIUS OF ELECTRICITY, from the Statue by Antonio Rosetti.
Literary Contributions:—Heliography; British Artists—Henry Stacy Marks, illustrated; Visits to Private Galleries; The Picture Galleries of Italy, illustrated; Exhibitions of the Dudley Gallery, the Photographic Society, and the French Exhibition; Museums of England, illustrated; &c. &c.
And several other Articles relating to the Fine Arts.
*** The Volume for 1870 is now ready, price 31s. 6d. bound in cloth.
London: VIRTUE & CO. 26, Ivy-lane, Paternoster-row.

Now ready, handsomely bound in cloth gilt, gilt edges, Price 5s. each.

WONDERS of ARCHITECTURE. With 29 Illustrations. A Comprehensive Popular Sketch of the Chief Architectural Achievements of Ancient and Modern Times, including a Description of Notable Buildings which have been erected.
"The little work before us is a great help to the formation of our taste and the study of a great science."—*Naval and Military Gazette.*

WONDERS of ACOUSTICS. With over 100 Illustrations. Comprising a Popular Account of the Phenomena of Sound; describing its Effects, Propagation, Intensity, Velocity, Reflection, Resonance, and Quality, with Anecdotes and Legends, &c. &c.
CASSELL, PETTER, & GALPIN, Ludgate-hill, E.C.

Now ready, Part I. price 7s.

CASSELL'S TECHNICAL EDUCATOR, uniform with "CASSELL'S POPULAR EDUCATOR" (of which nearly Three-quarters of a Million have been sold), containing:—
WEAPONS of WAR. By an OFFICER of the ROYAL ARTILLERY.
FORTIFICATION. By an OFFICER of the ROYAL ENGINEERS.
PRINCIPLES of DESIGN. By CHRISTOPHER DRESSER, Ph.D. F.L.S. &c.
COLOUR. By PROFESSOR CHURCH, Royal Agricultural College, Cirencester.
THE ELECTRIC TELEGRAPH. By J. M. WIGNER, E.A.
APPLIED MECHANICS. By ROBERT BALL, M.A. Professor of Applied Mathematics in the Royal College of Science, Dublin.
CHEMISTRY APPLIED to the ARTS. By G. GLADSTONE, F.C.S.
AGRICULTURAL CHEMISTRY. By CHARLES A. CAMERON, M.D. Ph.D. Professor of Hygiene in the Royal College of Surgeons, Ireland; Analyst to the City of Dublin; Honorary Member of the New York State Agricultural Society, &c. &c.
AGRICULTURAL DRAINAGE AND IRRIGATION. By Professor WRIGHTSON, Royal Agricultural College, Cirencester.
CIVIL ENGINEERING. By E. G. BARTHOLOMEW, C.E. M.S.E.
PROJECTION.
BUILDING CONSTRUCTION.
ANIMAL COMMERCIAL PRODUCTS.
MINERAL COMMERCIAL PRODUCTS.
VEGETABLE COMMERCIAL PRODUCTS.
TECHNICAL DRAWING.
TECHNICAL EDUCATION ON THE CONTINENT. By ELLIS A. DAVIDSON.
BIOGRAPHICAL SKETCHES OF EMINENT INVENTORS AND MANUFACTURERS. By JAMES GRANT, Author of "The Romance of War," &c.
NOTABLE INVENTIONS AND INVENTORS. By J. TIMBS, Author of "Things Not Generally Known," &c.
SEATS OF INDUSTRY. By H. R. FOX BOURNE, Author of "English Seamen," &c.
PRACTICAL GEOMETRY APPLIED TO LINEAR DRAWING.
*** Supplied by all Booksellers, and at all Railway Stations.
CASSELL, PETTER, & GALPIN, Ludgate-hill, London, E.C.

Just published, in one handsome volume, price 28s.

RIDDELL'S CARPENTER, JOINER, STAIR BUILDER, and HAND RAILER. Complete.
"To one and all this work will be found most useful."—*Builder.*
Edinburgh: THOMAS C. JACK. London: SIMPKIN & CO.

TO ARCHITECTS.—DESIGNS for new CHURCHES or CHAPELS, Episcopal or Nonconformist, or Engravings of Buildings recently erected, CAN BE INSERTED in the "BAPTIST HANDBOOK," the Annual of the Baptists.—For terms, apply to YATES & ALEXANDER, Symond's Inn, Chancery-lane, W.C.

TO ARCHITECTS AND SURVEYORS.
DESIGNS PREPARED from ROUGH SKETCHES or otherwise, in the best manner. Perspectives drawn and etched, or tinted. Quantities, billing, and abstracting with accuracy. Terms moderate.—Apply to Mr. MYERS TAYLOR, 19, Thavies-inn, Holborn.

PERFECTION in BOOKKEEPING.—BUILDERS and Others desiring a really good system, can have a SET of MODELS for BUILDERS' BOOKS, by DOUBLE ENTRY, to which was awarded the prize offered in "The Builder," No. 1,180, and which has been adopted by many large firms. Also a Modified Arrangement by Single Entry, suitable for small builders.—Address, E. A. 4, St. George's-road, Regent's Park, London.

GAS and WATER MANAGER.—The Widnes Local Board require the SERVICES of a Person thoroughly capable of undertaking the MANAGEMENT of their GASWORKS and WATERWORKS. The person appointed will be required to devote his whole time to the service of the Board. Salary, 180l. per annum.—Applications, accompanied by testimonials, in sealed cover, endorsed "Gas and Water Works Manager," to be forwarded to the Chairman of the Local Board, Widnes, near Warrington, on or before the 10th DECEMBER next.
THOMAS BEASLEY, Law Clerk.
St. Helen's, 16th November, 1870.

SURVEYOR.—Notice is hereby given, that the Vestry of the Parish of Saint George the Martyr, Southwark, are about to APPOINT a SURVEYOR of ROADS and SEWERS for the said parish, whose duties will be those arising out of the Acts which the vestry have to administer relating to the paving, cleansing, watering, and lighting of the roads and highways, and to the sewerage of the said parish. The salary will be 200l. per annum. He must have no other occupation, and must be a good draughtsman. He will be required to abstain from all dealings except on behalf and by previous order of the Vestry, in goods or materials such as are required by the Vestry. He must give a bond, with two sureties in 200l. for the due performance of his duties. Every candidate must be under forty years of age, and in good health.—For further information, and as to the mode of application, candidates are to apply, personally, to the undersigned, at the Vestry-hall, in the Borough-road, Southwark, at ELEVEN o'clock in the forenoon, of any day (except Tuesday) up to and including SATURDAY, the 3rd day of DECEMBER, 1870.—By order,
DANIEL BIRT, Vestry Clerk.

TO JOINERS' MACHINISTS.
WANTED, a Man, thoroughly competent to Work and Take Charge of Joiner's Machinery in the neighbourhood of London.—Address, stating wages required, to 687, Office of "The Builder."

WANTED, immediately, by a leading London Firm, a PRIME COST and MEASURING CLERK. Must be thoroughly conversant and of first-class abilities.—Address, with full particulars of previous engagements, salary required, &c. 684, Office of "The Builder."

WANTED, an ASSISTANT BUILDER'S CLERK, able to estimate, measure up work, take out quantities, keep books, &c. Character must bear the strictest investigation. Salary 25s. per week to commence with. Office hours, seven till half-past five.—Apply, C. W. Laurel Cottage, North Hill, Highgate, between Two and Seven on Saturday, and after Two on Monday.

TO SURVEYORS' AND ARCHITECTS' ASSISTANTS.
WANTED, in an ENGINEER and SURVEYOR'S Office, in the country, the ASSISTANCE of a DRAUGHTSMAN. Must be well up in drawing and finishing plans of estates, &c. One with some knowledge of architecture preferred.—Address, stating age, salary, and qualifications, to A. B. 62, Coleman-street, London, E.C.

TWO or three good MARBLE or SLATE MASONS WANTED.—Apply to G. E. MAGNUS, Pimlico Slate Works, 153, Buckingham Palace-road, S.W.

TO WRITERS AND GRAINERS.
WANTED, by a Young Man who has served his time, an ENGAGEMENT as IMPROVER.—Address, H. H. 36, Hanover-street, Pimlico, S.W.

TO BUILDERS, &c.
WANTED, by a young Man, a SITUATION, as IMPROVER as above.—Apply E. S. care of Mr. Mee, Bourne, Lincolnshire.

TO PLUMBERS, BUILDERS, AND OTHERS
WANTED, by a Young Man, a Permanency as PLUMBER, PAINTER, GLAZIER, WRITER, GRAINER, and PAPERHANGER. Willing to make himself generally useful.—Address, W. S. 8, Gees-court, Oxford-street, Marylebone.

TO PLUMBERS AND BUILDERS.
WANTED, by a Young Man, a SITUATION, as a PLUMBER, GASFITTER, and PAINTER.—Address, A. M. PLUMMER, opposite The Royal Oak, Forest-rise, Lytonstone, Essex.

WANTED, by an Assistant, an ENGAGEMENT. Can prepare working and detail drawings, specifications, and perspectives. Fair colourist. Salary 25s.—Address, X. Mrs. Hann, 268, Gray's-inn-road.

WANTED, by a thoroughly experienced Architect and Surveyor's ASSISTANT, an ENGAGEMENT. Will render occasional assistance.—Address, J. J. 69, Upper Kennington-lane, S.E.

WANTED, by a respectable Young Man, who has served his time at the bench, a SITUATION as CLERK or TIMEKEEPER in a Builder's Yard.—Address, J. C. 1, Bank Buildings, High-street, Wandsworth.

WANTED, by a first-class PLUMBER, PAINTER, LEAD and SASH GLAZIER, PAPERHANGER, &c. a CONSTANCY or JOB. Seven years' reference.—Address, S. H. care of Mr. Lawrence, 10, Great Trinity-lane, Cannon-street, City, E.C.

TO BUILDERS AND IRONMONGERS.
WANTED, by an experienced WORKMAN, a SITUATION, as GENERAL SMITH and FITTER, in all its branches. Seven years' good character.—G. N. 7, Ray's-terrace, Great Church-street, Hammersmith, W.

TO ARCHITECTS AND OTHERS.
WANTED, by an experienced Assistant, an immediate ENGAGEMENT. Can prepare and finish drawings from rough sketches. Italian style, and make out details. Has some knowledge of Gothic, and can make perspective drawings. Salary moderate.—Address, J. M. C. Mr. Gobbin's, Ironmonger, street, Stamford, Lincolnshire.

WANTED, a SITUATION, by a young Man as SAW SHARPENER, or to work a deal frame.—Address, C. J. 11, William's-place, Griffin-street, York-road, Lambeth.

TO BUILDERS, PLUMBERS, &c.
WANTED, a SITUATION, as GENERAL HAND, in the PLUMBING, GAS-FITTING, or ZINC WORK. Willing to fill up time painting, &c.—Apply to W. H. 69, Church-street, Croydon.

TO BUILDERS.
WANTED, a SITUATION, by a Young Man, CARPENTER and JOINER, as IMPROVER. Has been at the trade five years. Wages low if for a constancy.—Address, Mr. MORGAN, 19, New-street, Kennington Park-road.

TO BUILDERS.
WANTED, a SITUATION, as WORKING FOREMAN, by an experienced Man in stairs, shop fronts, sashes and frames, boxing shutters, and the general work of a building. Has been accustomed to machinery. Can work a general joiner if required.—Address, SMITHLY, 19, New-street, Kennington Park-road.

WANTED, a SITUATION, as FOREMAN in a TIMBER-YARD and SAW-MILL. Fully understands the management of rack, vertical, and ground-off saws; has had many years' experience in the conversion of English and foreign timber. Unexceptionable references given.—Address, C. C. 3, Blenheim-terrace, Gloucester.

WANTED, a Permanent SITUATION, in the Country, by a thoroughly practical PLUMBER and GAS-FITTER. No objection to painting and glazing. Understands general repair of houses. Suitable for an estate or builder.—Address, D. I. care of Mr. T. JAMES, Richmond-road, Twickenham, Middlesex.

WANTED, EMPLOYMENT, by a CARPENTER and JOINER. Used to dilapidations. Has a good knowledge of plans, specifications, and accounts. Capable of taking charge of a job or shop.—Address, No. 320, 10, Little Windmill street, Haymarket, W.

WANTED, EMPLOYMENT, by a London DRAUGHTSMAN and COLOURIST. Perspective, quantities, measuring up, &c. Town or country. No objection to contractors, railway works, engineers, &c. Terms from 30s. 6d. weekly.—Address, R. H. D. 2, King Henry-street, Kingsland, N.

TO BUILDERS AND OTHERS.
WANTED, EMPLOYMENT, by a handy steady Man. One that well understands the Painting and Glazing. No objection to distance. Good reference if required. Wages, 18s. per week.—Address, A. B. Mrs. Major, New Hampton, Middlesex.

TO BUILDERS AND HOUSE AGENTS.
WANTED, EMPLOYMENT, by an experienced, active Man, aged 32. Used to general alterations and house repairs, or shop, office, or warehouse fittings, &c.; or as TIMEKEEPER (carpenter and joiner by trade). Very low wages accepted.—Address, L. M. at Mrs. Goulding's, 13, Fieldgate-street, Whitechapel, E.

WANTED, an ENGAGEMENT, as CLERK of WORKS or GENERAL FOREMAN, by an experienced Man. Can prepare working and detail drawings, specifications, &c.—Address, X. L. Wilkes's Library, Dalston-lane, E.

TO ARCHITECTS AND BUILDERS.
WANTED, an ENGAGEMENT, temporary or otherwise, by the Advertiser. Is a good draughtsman; well up in details and construction, taking out quantities, measuring up works, estimating, book-keeping, &c. Six years' reference to last employer. Aged 27.—Address, R. A. 66, Ernest-street, Albany-street, Regent's Park.

TO ARCHITECTS AND SURVEYORS, &c.
WANTED, a RE-ENGAGEMENT, as a good GENERAL ASSISTANT. Is very neat and expeditious. Terms moderate.—Address, W. W. 17, Denbigh-street, Pimlico.

TO ARCHITECTS AND SURVEYORS.
WANTED, a RE-ENGAGEMENT, by a good GENERAL ASSISTANT. Good references.—Address, S. E. T. 45, Foley-street, W.

WANTED, a RE-ENGAGEMENT, by a BUILDER'S CLERK, in an Office or on a Building, either in Town or country. Good references given.—Address, G. Z. 1, Wellington-road, Coldharbour-lane, Camberwell, S.

WANTED, a RE-ENGAGEMENT, as SHOP FOREMAN of JOINERS, GENERAL OUT-DOOR FOREMAN, or CLERK of WORKS, by a thoroughly practical Joiner and Staircase-hand. Aged 33. Good draughtsman, and well up in machinery and piecework. First-class references from London firms.—Address, H. K. 13, Richard-street, Liverpool-road, Islington.

WANTED, a RE-ENGAGEMENT, as CLERK of WORKS, having just completed a large job under an eminent architect, or as a Builder's Assistant. Used to making drawings, setting out work, management of men, keeping books, &c. Joiner by trade. First-class references. Aged 29.—Address, W. R. 43, Malvern-road, Dalston, N.E.

TO BUILDERS AND DECORATORS.
WANTED, a JOB, by a good GRAINER and plain WRITER. Thoroughly competent to take charge of painting work if required.—Address, C. R. 12, Broadley-street, Alpha-road, Regent's Park, London.

TO BUILDERS, DECORATORS, &c.
WANTED, by a good THREE-BRANCH HAND, a SITUATION, or as WORKING FOREMAN. A good grainer, and thoroughly understands all branches of the business.—Address, A. B. 40, Duppa's-hill, Croydon, S.

TO ARCHITECTS, &c.
WANTED, by the Advertiser (a neat and quick DRAUGHTSMAN, of upwards of five years' experience), a RE-ENGAGEMENT in an Architect's office.—Address, W. D. care of Mr. Durham, 103, Manor-street, Chelsea, S.W.

WANTED, by the Advertiser, aged 31, an ENGAGEMENT with a Builder. Well conversant with the details of the business, and good accountant. Has a connexion, which might be made mutually advantageous.—Address, B. Y. care of Thomas Fleming, Esq. 7, Denbigh-place, S.W.

TO CONTRACTORS AND OTHERS.
WANTED, by an experienced Young Man, aged 23, a SITUATION as CLERK, TIMEKEEPER, or to Superintend Works. Seven years' good character.—Address, W. R. 13, College Gardens, Brighton, Sussex.

TO BUILDERS AND OTHERS.
WANTED, by a middle-aged Man, a SITUATION as WORKING, SHOP, or GENERAL FOREMAN. Would take any amount of joiner's work by the piece, stairs, &c. No objection to the country or to go abroad. References, testimonials, and security, if required.—Address, H. S. Post-office, Slough, Bucks.

The Builder.

VOL. XXVIII.—No. 1452.

*Engineering Education.**

THE Council of the Institution of Civil Engineers have rendered valuable service to the country by the publication of a volume on the training and *status* of civil engineers in the United Kingdom and in foreign countries. No name is annexed to the work as that of responsible editor; an inconvenience which may be thought to be counterbalanced by the authority given to its statements, as being put forth by the Council of the Institution. The sources of the information as to professional education abroad (many of them well known and respected in this country) are severally stated, and the opinions of Englishmen of more or less eminence are extracted in a separate part of the work. There is not, however, any such summing up of the evidence, or delivery of the mature recommendation of the Council on the important subject which they have illustrated, as might have advantageously closed the work. We are rather furnished with materials for comparison and for meditation, than with any original contributions on the part of the Institution to the solution of the all-important question of technical education.

Honestly and fairly the work is admitted, on the first page, to be the result of alarm, and to be undertaken with a view to self-defence. "Technical education in this country," it is remarked, "was stated, a few years ago, to be so much inferior to that in other European States" as to threaten seriously the industrial interests of Great Britain." . . . "The Council of the Institution of Civil Engineers felt it their duty to interest themselves in that part of the inquiry which bore upon their own profession." "They resolved that it would be highly desirable in the first instance to obtain, from the most direct and authoritative source, full information as to the system adopted for the education and technical training of engineers, and generally as to the status of members of the profession in various foreign countries where this profession had assumed an important position." Somewhat late in the day, then, the replies to the inquiries on the first head are now brought before us. The subject of Continental engineering education is illustrated in some detail, although the very important question of the preliminary training of the student is left out of sight. Few persons whose views on the subject of education are based on exclusively English experience are aware of what is required, for instance, for the *entrance* examination into those institutions,—such as the *École Polytechnique*,—a three years' course in which is an indispensable preliminary to the *commencement* of a special course of three years more, in the exclusively engineering colleges, such as the *École des Ponts et Chaussées* and the *École des Mines*.

The portion of the work which we recommend every reader first to peruse is that containing extracts from Mr. John Scott Russell's volume on Technical Education for the English people, which closes the third part. The mild tone in which the Council of the Institution speak of the menace to our industrial interests finds an echo of portentous significance in the practical statements of Mr. Russell. "It is notorious," says that gentlemen, "that those foreign railways which have been made by themselves (*sic*) in the educated countries of Germany and Switzerland have been made far cheaper than those constructed by us in England; it is known that they have been made by pupils of the industrial schools and technical colleges of those countries. . . . The experienced traveller can read as he travels the work of a superiorly educated class of men. . . . We everywhere feel that we are in the hands of men who have spared no pains, and who have applied high professional skill to minute details." The works of the foreign railway stations, the comfort and convenience of the carriages, the economy in capital outlay, and the amount of net revenue,—every element of comparison except speed,—are contrasted with our own to the disadvantage of the latter.

In marine steam-engines, Mr. Russell — and none can doubt his competence as a judge in this respect—tells us that we are "equalled, if not beaten." The large marine-engine of Dupuy de Lôme, exhibited at Paris in 1867, "would consume less fuel, do more work, endure longer, and run less chance of accident than our engines; all of these being qualities heretofore constituting our own superiority. The iron armour of the French ships is stated to be equal to our own; the artillery superior; the French having obtained that which we had failed to obtain, after an enormous outlay—"efficient breech-loading guns, which enable them effectually to deliver seventeen shots to our ten." Mr. Russell would no doubt have added, if his work had been more recently published, that the iron-clad ships of the French navy, as a rule, are constructed to swim with the deck upwards, and not to turn over like a turtle, and go to the bottom like a shot. The advantages of the technical education of the French shipwrights compared with that which in some parts of this country, and even in some pages of the work before us, we find to be boasted as "practical," never had a more pregnant illustration than in the fate of that supreme effort of our private dockyards.

In land steam-engines, economy of boiler power, advantageous application of steam, and superiority in mechanical contrivance, enable the French engine-wrights "to get more power out of a given quantity of fuel in a higher proportion even than the greater cost of our own fuel exported into France." In rails, railway wheels, tyres, and axles; in large wrought-iron beams; in frames for ships; in plates and bars, the English work is excelled in size and quality, and competed with in price. We can add our own personal testimony to the fact that this great stride in manufacturing excellence has been made within a dozen years. Nor is France alone in her excellence: Prussia equally displays engineering triumphs. She produces "steel cannon, more powerful than any of our own, carrying larger shot, with heavier powder charge; large ingots of steel, of magnitude and quality unequalled by any nation; tyres of locomotive wheels, which, imported into England, supersede our own highest qualities of iron; and complicated members of machines forged by Krupp out of a single piece of steel, so as to be equivalent to eight or nine of the old pieces, formerly fastened imperfectly into one."

We cite the testimony of Mr. Scott Russell, thus clothed with the authority of the Council of the Institution of Civil Engineers, not so much for its novelty as for its point. In those important branches of the profession of civil engineers as to which the witness can speak with authority, England, he tells us, is behindhand, when compared with France, Germany, and Belgium. In the construction of railways and railway plant (themselves of English invention); in that of marine engines and ships of war; in that of artillery; in smelting, mining, locomotive building, and the great branches of commercial machinery; in the organisation of skilled labour; we are becoming yearly unable to compete with the pupils of the technical schools of the Continent. For other branches of that noble profession which, rightly studied and practised, has for its aim to give to man the mastery over the fury of the elements, and over the physical forces of nature, we have a yet more gloomy prospect. Mr. Scott Russell, in a sketch of the education which he proposes to be given to the civil engineers of England, omits some important departments of the subject; while, in the selection of others which he proposes to introduce there is evinced some want of acquaintance with the magnitude, character, and difficulty of certain great ranges of scientific and artistic study. Thus forestry, a branch of the duties of the civil engineer of the utmost moment in our colonial empire (to say nothing of home) is not referred to. Mining forms no part of the proposed *curriculum*, although the practice of that occupation underlies the whole of our mechanical prosperity, and gives employment to so many of our population. Agricultural engineering, in which, both in its civil and its mechanical branch, lies the great hope of our future national wealth, is unnoticed. On the other hand, the "Theory of Beauty and Ugliness" is named as one of eight divisions of ordinary technic education, while the attainment of any such theory can only be regarded as the result of the specially devoted lifetime of a man of the highest natural gifts. Again, "Political Economy" is named as a "practical application of pure science!" side by side with the far inferior, but not more "purely scientific" subject of "workshop economy." This is like making political history a department of zoology. Mr. Russell has perhaps done more to show the actual defects of our system by giving a sketch of what reformers think it ought to be, than even by comparing its results with those of the higher education of Continental Europe.

Such being the outcome of our present system of engineering education, it is with regret that we see such remarks published by a president of the Institution of Civil Engineers, as,—"In the practical branches we are admittedly superior" (p. 192). Such a statement, however true it might have been twenty years ago, can now tend only to mislead. The idea of balancing what is called a "practical" against a "theoretical" education, is one of those shifts by which the introduction of any system of sound training has often been most successfully resisted. Put in its true light it means,—"Rule of thumb for ever." No doubt can be entertained that a purely abstract education, uninformed by practical experience, can never make a good engineer, any more than it can make a good physician, surgeon, or soldier. The mere intellectual work of acquiring information is simplified and rendered more easy by the introduction of specimens and experiments; and in all matters of construction no education is worthy of the name that does not make the

* "The Education and Status of Civil Engineers in the United Kingdom and in Foreign Countries." Compiled from documents supplied to the Council of the Institution of Civil Engineers. London. 1870. Published by the Institution.

pupil, to some extent, handy in each constructive process. But the practical experience thus attained is of tenfold or hundredfold value when the attention is prepared to grasp the facts by proper preliminary culture. To speak of "practical" as opposed to "theoretical" education is to put a part for the whole. It is like attempting to teach botany by sending a man to live in the country for a twelvemonth, bidding him observe all the plants that come within his reach, and then calling him into the lecture-room, and requiring him to give his notions of the relative value and range of the artificial and the natural systems.

Our own system of "practical" education for the engineer is thus described by Professor Fleeming Jenkyn, M. Inst. C.E., in an inaugural address delivered in the University of Edinburgh in November, 1868, cited in the work before us:—

"Young men, at the age of about eighteen, enter the office of a civil engineer. Usually few questions are asked as to previous training. . . . The ordinary pupil is a sort of nuisance in an office, only tolerated in consideration of the fee which accompanies him. . . . Most pupils are so ignorant of algebra that they are not only incapable of working out a result for themselves, but actually cannot apply the simple *formulæ* which are given in engineers' pocket-books. The calculation of the solid contents of a wall is often beyond their powers. Their arithmetic is very shaky, and a knowledge of physics, chemistry, geology, or the higher mathematics, is wonderfully rare. . . . Not even a pass examination is required, and the ignorance of some pupils, especially in mechanical workshops, must be experienced before it can be believed. . . . *No one teaches them anything*, but they have the opportunity of seeing how some actual work is done."

The above description is not our own. It is given to the world under the authority of the University of Edinburgh, backed by that of the Council of the Institution of Civil Engineers! Let us hope that part of the shadow may be set down to the desire of the lecturer to make a brilliant rhetorical display. The remainder of the inaugural discourse is hardly such as to lead us to regard it as altogether a serious effort. The Professor is of opinon that "certainly much less" theory than is given abroad is required by the engineer. He would keep our technical education on a confessedly low footing, and tickets the breadth of his own views by the recommendation to "abolish Euclid as pestiferous." Still, with whatever-sized grain of salt we may season the account, there is in it too much of truth. In times of full employment the engineer in high practice has no time to give to his pupils. We are not aware of any instance in which a system of education has been organised as part of the office routine. In times like the present the engineer, for the most part, has either no pupils at all, or no opportunity of giving them practical experience, and no heart to give them theoretic teaching. The result is that the two or three years spent under the articles of apprenticeship are often wasted, or worse than wasted. If, at the close of the articles, a young man is fortunate enough to get an appointment of sub-engineer, and conscientious enough to devote his best energies to the discharge of his duties, he may be considered as then commencing his education—commencing it without teacher, guide, or prescribed plan of study, and furnished only with an amount of available education that would not be enough to give him the remotest chance of admission to the *École Polytechnique*.

For the contrast afforded by the Continental systems of education we must refer to the volume itself and to previous papers in our own journal. The information the former contains comes from France, Belgium, Holland, Sweden, Russia, six States of North Germany, three States of South Germany, Roumania, Switzerland, Italy, and Spain. In the United States and Canada alone, out of Great Britain, it seems to be considered satisfactory that "any body is as free to assume the style and title of Civil or Mining Engineer as he is to take that of blacksmith, and it is still done commonly without any regard to school diplomas." On the Continent of Europe, indeed, there is no absolute prohibition, as a rule, against the practising of self-taught or untaught engineers. But such men must enter the field at such considerable disadvantages, as compared with those where skill is attested by Government diploma or official rank, that only in rare circumstances can they have much chance of success.

The natural division between the civil and the military branch of the profession of engineers may be said to be everywhere prevalent. The latter forms, together with the artillery, the scientific portion of all European armies. But the care of the State extends, in most educated countries, to the support of institutions for the training of civil engineers, and to the consequent recognition of the distinct and organised *status* of the pupils who pass through these establishments with credit. In France two distinct bodies of civil engineers,—the *Ingénieurs des Ponts et Chaussées*, and the *Ingénieurs des Mines*,—are in the service of the State. The *École Centrale* was founded, about 1830, by an association of *savans* to train engineers for private industry. Since 1860 this school has been transferred to the direction of the State. The *École des Mineurs de St. Étienne*, the *École des Arts et Métiers*, and the *École d'Alais*, are elementary and practical schools for the training of foremen and managers of works. The recognised civil engineer in France enters on the active discharge of the simpler duties of his profession after a careful and thorough education of some fourteen years' duration, seven or eight in a *Lycée*, three in the *École Polytechnique*, and three in the *École des Mines*, or the *École des Ponts et Chaussées*, at Paris. The practical advance made by both the civil and the mechanical works of France during the past quarter of a century is such as to give a complete answer to any questions that may be raised as to the value of the professional training supplied by the State.

In Belgium the *Athénées*, or Royal Schools instituted in the different provinces, invariably comprise a professional section, preparing the pupils to enter the *École du Génie Civil* at Ghent, the Military School at Brussels, or the School of Mines at Liége. Five different civil diplomas are granted by these schools; although the law does not forbid the title of engineer being assumed without a diploma. The same principle of careful provision for the educational training of a body of competent engineers adequate for the civil requirements of the country prevails, with minor modifications, throughout educated Europe.

With regard to the important question of the *status* of the civil engineer, either in this country or abroad, little is directly said in the volume before us. On the Continent, as a general rule, the civil engineer ranks with his military brother; holds an acknowledged position in society, a definite rank in his own profession; and on all public occasions, court ceremonies, and the like, has the *pas* over untitled civilians. In this country it must be admitted that the social position of an engineer depends on his personal qualifications, rather than on any *prestige* reflected by his calling. The history of the profession is fresh within the memory of many of us. Before the great stimulus which was given to our public works by the genius of the Stephensons and their fellow workers, civil engineering cannot be said to have existed in this country as a distinct profession. Men of practical sagacity, or of constructive or mechanical ability, such as Watt, Rennie, Telford, rose from time to time to fame by the sheer force of genius. The school, if school there were, of pre-railway engineering, was of a very modest and humble character. The immense impulse given to constructive works by the success of the Liverpool and Manchester Railway caused a sudden demand for civil engineers. Robert Stephenson then reaped the full benefit of the education which his father had practised an honourable parsimony in order to afford him. Isambard Kingdom Brunel brought to the aid of hereditary genius the unusual advantage of thorough scientific training, having been a pupil of the *École Polytechnique*. The early railway engineers who came at all near those two distinguished men in public esteem owed their rise, for the most part, either to fortunate combinations of circumstances, to experience, which, though limited, was the largest available, or to that practical sagacity in dealing with physical difficulties, or in inspiring confidence in those who consulted them, which is sometimes a safer acquisition than more brilliant gifts. These men had no tradition of learning, little *esprit de corps*, no idea of any duty incumbent on them to originate a Guild, or to found a Faculty, of Engineering. Those of their pupils who had their wits about them obtained rapid promotion, which might enable them to learn their business; those who had no such qualifications were yet able to find employment as surveyors (for the annual Parliamentary demand for plans), or as draughtsmen. A large body of men became rapidly congregated, with no organisation, no security for education, no definite aim but to do the work of the day,—to make as rapidly as possible the railways and subsidiary public works, for which the public found the money.

Together with these impromptu engineers grew up the great body of contractors,—men trained, for the most part, to the use of the pick and the shovel, but often gifted with an instinctive knowledge of prices, and a wonderful practical sagacity, to which the world owes not a little. They 'made,' in some instances, large private fortunes. But no one who is acquainted with the actual state of our experience as to the cost of work in 1832, can doubt that the contract system saved, in the early railway operations, many millions to the shareholders.

With the slackening of work consequent on our unwise and improvident effort to complete our great lines of internal communication simultaneously, a change took place which we regard not only as a professional, but as a national disaster. Engineers who had become accustomed to competence, or to more than competence; contractors who had made, or had lost, or had seen others make, large sums of money; dependents of all kinds, down to the sturdy army of the sons of labour created by our public works, viewed with natural dismay the cessation of employment. Then came a sort of galvanic energy, impressed by these men on the public, the period of "contractors' lines," a second season of activity, based on no real national want. The result was ruin. Loss to the shareholders, who had run after promised dividends like sheep at a gap. Ruin to many of the large contractors, who had been tempted by fabulous paper profit to undertake responsibilities which they could only sustain for a time, and of which the public declined to relieve them, and starvation to a host of engineers. It was not under such circumstances that—human nature being what it is—the status of the profession was likely to be defined, or the broad and deep basis of a well-tested education to be laid as the foundation of its future prosperity.

We are not among those who believe that there is no future for the civil engineer in England. But we hold that it is only by equalling the thorough scientific education of the Royal Engineers in this country, and of the civil and military engineers of the Continent, that that future will be secured. Very much is now falling into the hands of the Royal Engineers (the most highly educated body of men amongst us) that would be more naturally, and, in our opinion, with more satisfaction to all parties, discharged by civil engineers equally well educated. For all dealing with manufacturers, contractors, hygienic bodies, agricultural improvers, and the like, a military education is in itself somewhat of a disqualification. The attempt recently made to depreciate the value of the professional service of the architect and the civil engineer, to throw the responsibility of civil works, or of private speculation, on officers of the Royal Regiment, and to "sprinkle in" decorations by the employment of any architect who will condescend to take the part of a painter or decorator, is, we feel certain, most pernicious. In the face of a body either of civil engineers or of civil architects educated and organised as they are on the Continent, such an attempt would not only have been futile, but it would never have been dreamed of. As things stand,—thoroughly wrong as we are convinced that it is,—it can hardly be said to be without excuse.

We shall rejoice if the example of the Council of the Institution of Civil Engineers in publishing this volume be followed by other associated bodies. Nothing would be of more value at the present moment than a good description of the educational establishments which are doing so much for German engineering. The schools at Creuzot, or those attached to the manufactory of Herr Krupp, and some others on the Continent, are institutions of the highest technical value and of the utmost national importance. If we are to remain a manufacturing people, we must equal or excel our neighbours in this essential element of science. A clear, precise, masterly report on the technical schools of Continental Europe is a desideratum of extreme importance for our industrial future.

Proposed Church for West Brompton.—A church of large size is about to be built in Redcliffe-square, West Brompton. The designs have been made by Messrs. George & Henry Godwin, architects, and will shortly be submitted to builders for tenders.

ARCHITECTS, BUILDERS, AND THE PUBLIC.

THE following observations were made by the President of the Royal Institute of the Architects of Ireland at the opening meeting on the 24th ult., and will be found interesting:—

A topic of peculiar interest to ourselves has occupied a good deal of attention lately; and the discussion of it has caused a good deal of criticism—of a more or less depreciatory character—to be directed to our profession, its claims, its charges, its position, and its organisation. I allude to the well-known case of Mr. Ayrton, Chief Commissioner of Works, and Mr. Barry, as architect to the Palace of Westminster. It is unnecessary to occupy your time with any comment on the manner in which this controversy has been conducted. It is worth while, however, to advert to some of the points involved in the case, to remove misapprehensions in the public mind, which have prevailed even in quarters where the habit of judicial caution would, one would have supposed, have caused at least a suspension and hesitation in pronouncing against the custom of an honourable and not unlearned profession which has prevailed throughout the whole extent of Great Britain and America, and had so prevailed within the memory of man. A custom of such men, and so prevalent, is not to be condemned and dismissed as absurd without weighing all the circumstances. The case of the architect has to my mind never been fully or properly stated. Very important elements of it have been left merely implied by one side, and have not been appreciated by the other. I take it that our case, our whole case, stated broadly but simply, is this:—"After affording the client the full use of the plans, we claim the ownership of them, that they are ours, and that we have a right to them, that this right is founded in fairness and common sense, and has been maintained *semper et ubique et ab omnibus*." This is at once a tradition and dogma of the profession; and the only modification of this right is the right of the employer to the use of the plans as far as required for the execution of the works designed, or for explaining details of construction after execution. However circumstances may vary or modify its application, this is the right which we architects claim, which we all claim, which our fathers in the profession claimed before us—we claim no more than they did, and no less; even as they charged at the rate of 5 per cent. for the invention and use of their designs, we charge the same for the same; even as they gave only the use of the plans showing and explaining the invention, so we give only the use in the same way and to the same extent. What is there unfair or monstrous in this? In what way are the public defrauded? We have the same grounds for claiming the proprietorship in our plans as we have for charging 5 per cent. Will any judge say to a jury that an architect is not entitled to charge 5 per cent. for his services? Will he not rather say, and be bound to say, "It has been proved that 5 per cent. is the usual and customary charge for the services of an architect, and if those services have been performed, you must measure the compensation to be paid for them by that scale." Now, here we have a sort of equation: substitute proprietorship of plans for the 5 per cent. charge, and the judge's charge would run,—"It has been proved that the proprietorship of the plans, according to the use and custom of the profession, remains with the architect, and you must find accordingly." The cases are perfectly parallel. It is not a question of feeling or fancy, or even reason; it is a simple case of barter and exchange, and therefore to be ruled by custom and usage. Only it happens that every one knows that an architect's usual charge is 5 per cent.; few have the opportunities of knowing exactly the limits and boundaries of what is contained and included in what the architect is bound by custom to give for the 5 per cent.

It is stated that a case has been submitted to the Attorney-General of England on behalf of the Crown, and that his opinion is adverse to the claim of the architects. This is of very little importance; counsel advise on the case put before them, and on that case only. Now, in every dispute there are at least two sides; and, before it can come on for trial, at least two counsel, more or less learned in the law, must advise each that the client who consults him has a good case, and yet one of them must have a bad one. It would spoil a good many actions if only both cases could be submitted to one counsel; many a busy barrister, in such a state of things, would be reduced to the state of Neal Malone, the pugnacious little tailor, "blue-moulded for want of a fight." There can be no doubt that the opinion of the English Attorney-General is deserving of every respect, but until we see the case on which it was formed and expressed, we shall be premature in assigning any weight to it; and the previous history of this transaction, in which so much passion and prejudice has been intruded, leads one to view any case that would probably be submitted to counsel as subject to great suspicion of one-sidedness and unfairness—a case rather inviting concurrence in a foregone conclusion, than fairly describing doubts and asking for a solution of them.

Incidental to this question there has been a good deal of reference, in anything but complimentary terms to our profession and those bodies—such as our Institute—in which we are associated. They have been called trade-unions, and have been described as organisations for the purpose of overcharging the public. The unfairness of these charges and insinuations must be pardoned for the temptingness of them. In the heat of debate the opportunity of delivering a knock-down blow affords an irresistible temptation; no man can pause and reflect on its unfairness. There are, however, differences between our trade-unions and those of Sheffield among the grinders, and those among our *collaborateurs*, the brick-makers of Manchester. We do not raise our rates of wages when trade is brisk, nor do we blow up, assault, or attack in any way, physically or morally, members of our profession who choose to work cheap. It is true we neither admire nor imitate such irregularities of practice; but, we do tolerate them. Our trade-union peculiarities are therefore, so far as regards the rate of compensation for services, merely declaratory, and, as such, are as useful to the public as to ourselves,—both they and we have a common standard, easy of application, to appeal to, and by which we are bound. One moment's reflection will show any one that the public—the employers—are even more benefited by having a distinct, clearly-defined scale to appeal to, and by which to measure the value of services rendered, than we are. I will give you an instance. Not long ago a civil engineer made what were called, by a stretch of courtesy, plans of a building, for which he charged, and was paid, 70*l*. These were very rude and imperfect sketches, without specification, or such drawings of details as would have been necessary to enable an estimate of the cost to be made by measurement in the ordinary way. The building would have cost, if executed, about 600*l*. at the outside. Now, according to the rules of this our organisation for overcharging the public, had one of us furnished these plans (had you seen them you would recognise the wide stretch of imagination necessary to realise even in fancy the possibility of such a thing); but had they been supplied by a member of this trade-union, he would, according to its rules, have been entitled, when he had completed his work by supplying the additional drawings that were necessary and the specification, to a sum of 15*l*.! So much for our organisation for overcharging the public. I presume, however, that even our detractors will acknowledge that it is for the interest of the public that architects should be as accomplished as possible in all the arts and knowledge required in the practice of their art, and that it is not undesirable, in the same interest, that they should meet, and by the interchange of ideas and experience, mutually improve each other, and by establishing a healthy tone of public opinion among the members of the profession, keep up a standard of respectability among its professors and practitioners which can be maintained by no other means. We are not singular in having such an organisation,—every calling or occupation among us has its union of some sort or other; and, being founded on reason, usage, and custom, we shall take the liberty of maintaining it, in spite of ugly names and angry vituperation.

There is one branch of our professional practice which is in a most unsatisfactory state,—I allude to the measuring and surveying branch, which concerns itself about the preparing of bills of quantities from the plans and specifications, the measuring and valuing work executed, or the computing the value of works not executed. This is a very important matter, and one which is greatly in need of being regulated as to the scale of charges, according to the guiding principle of our organisation as a trade-union, for the protection of employers, and to a less, but still considerable extent, for the protection of contractors. It is very desirable, and I earnestly invite the attention of the Institute to it, that a scale of charges should be framed and published under the authority of the Institute, such as it is, by which a remuneration would be fixed that should be fairly proportional to the labour and time expended. I would advocate, not one uniform per-centage rate, but a rate varying with the quantity and quality of the builder's work done or to be done; so that each employer should be called on to pay in proportion to the value of the services rendered to him. At present there is, I know, a rough approximation to such a system of charging, but it is deficient in every respect; and in fact there is no rule, or, as I would prefer always to put it, there wants an authoritative declaration of the usage and custom of the profession. There are other defects in the present system, or rather want of it. The independent building surveyor is subject to very great temptations. In common with all the rest of the world, he is liable to err—he, perhaps, more than usually so, from the business being one of immense detail, and not admitting of any such mechanical means of insuring accuracy as the system of double entry in book-keeping. For instance, probably no two surveyors, measuring from the same plans and specification, and using the same scale of prices, would bring out the same result. In this liability to innocent and hardly-avoidable error, there is an irresistible temptation to protect the contractor, who only has the means of discovering omissions or shortcomings by taking out all the quantities full, as it is technically called, which, being interpreted, means making the employer pay a little more on all items, to guard against the chance of his paying less on some than he ought. Another temptation not without weight occurs in cases of competition; and it is my experience of such cases that the measurer, although paid, in the long run, by the employer (the public), is generally appointed by and, in the first instance, paid by the builder; and that his continuing to be employed depends largely on his skill and ability in swelling the builder's bill. In theory, he is a sort of arbitrator; in practice, he generally is attorney for plaintiff; and, while I would never dream of charging them with purposely increasing quantities or prices with reference to what the amount of their percentage at foot of the account will come to, I do maintain that there is an unwholesome influence exercised by their position at present, which is such that they will lose their clients if they fail to make out big bills. Now the remedy for this state of things appears to me, and I throw out the suggestion with great humility;—(I am peculiarly circumstanced, but perhaps that peculiarity may be of some advantage in considering matters such as these.) The remedy I would suggest is, that the architect should resume the functions which have by degrees, during the last generation, been gradually devolved on a separate class of practitioners—a distinct branch arisen within the profession. I would recommend that we should become again architects and *surveyors*; that we should ourselves, either personally or by deputy, in our own office, or by employing some other person, but in every form of the case that we should ourselves be the responsible surveyor or measurer. This is very much the custom in England, and is, I believe, all but universal in Scotland. In England, however, I believe there exists a vicious custom of collecting the charges for these services from the builder, who in turn charges the employer. This is a vicious custom which I hope will never be established here, and it is wholly unnecessary. Let the charge made for the work be a fair and reasonable one, in accordance with a scale published by the Royal Institute of the Architects of Ireland, as the fair, usual, and customary charge for such services rendered, and there should be no necessity for disguise about it. Let the charge be made openly and above board to the employer himself, and therefore to his knowledge: not as the English practice seems to be, surreptitiously, anonymously, in disguise, as it were, as if there were something to be ashamed of. Such a course is largely for the interest of the employer, and not antagonistic to the proper interests of the builder; and in this respect also, should the suggestion which I have ventured to throw out be acted upon, our trade-union will prove itself to be endowed with the highest of the Christian graces,—the charity

which does good to its natural enemy—the public.

The most prolific source of suits at law about buildings is the question of quantity and value. Whether work is done or not, is a matter of fact, and capable of ocular demonstration; whether it is done well or ill, is comparatively rare as a subject of dispute; but quantity and value are the commonest grounds of dispute, and if the ingenuity of the most perverse of human beings were puzzled out to devise the worst sort of tribunal before which to bring such a dispute, none could be devised worse than a British judge and jury. With a judge alone there exists the disqualification arising from technical ignorance, but which is often to a great extent overcome and neutralised by intelligence and good ordinary common sense; but multiply the judge's worst difficulties and disqualifications by twelve, and you have a state of things so monstrous that nothing but the vicious conservatism of mere lawyers has maintained it to the present day. Our common law and trial by jury are themselves on their trial; thinking men are recognising both to be relics of barbarous ages, suitable for a state of society and relations which existed 300 years ago, but which no longer does exist; and we may hope that ere long courts will be established on the principle of deciding cases according to the equity involved in them, and no longer in accordance with arbitrary rules and precedents which have long out-lived the theories on which they were originally based; and it is further to be hoped that arrangements may be made for constituting courts so as that the bench shall not be occupied by a judge sitting alone and unassisted, to whom the technical description of the material facts of the case, expressed of necessity in technical terms, is conveyed, or attempted to be conveyed, in a language as unintelligible as Chinese.

If I am not occupying your time too long, I should wish to say a few words about building contracts and competitions, and our intercourse as architects with builders. I am only saying what is within the knowledge of you all, that building contracts have become a very different sort of thing from what they used to be. They are changed both in form and complexion, and, generally speaking, for the worse. I can remember the time when the ancient style of building was not yet quite exploded, when for every work, at any rate of any importance, each trade formed a separate contract, frequently taken by different men; the person who did the bricklayer and mason's work was a different person from the contractor for the carpentry and joiner's work, who on his part never meddled with plumbing, plastering, painting, &c. In this distribution of the parts of the work among several contractors there certainly arose jealousies and bickering and recriminations frequently if things did not go quite smoothly; each trade was anxious to thrust the blame of delay or failure on to his neighbour's shoulders, and progress was necessarily slower; but there was a compensation in the system for even more serious inconveniences, for each contractor was master, in the strict technical craftsman sense of the word, of his own trade; he had a personal and thorough knowledge of it in all its branches; he had learned it in its first rudiments as an apprentice, and had worked his way to mastership in it. This familiarity begot a feeling of pride in good workmanship, and there was also a sort of rivalry arising from other craftsmen having to follow him in the building to go over and finish his work. Now, in our present system a man may become a builder who knows nothing whatever of the craft of building, and if he be prudent and careful in the selection of the person he employs, he may rise to eminence and opulence by it. It is a fact that few of our builders have really learned their business as a whole. They generally know one trade—that to which they were originally apprenticed—well, but of all the others have only acquired a very superficial knowledge. Now, to such men the value of work is estimated by what price can be got for it, not by the old scale of prices, based on the cost of materials, and workmanship, and a fair profit added thereto. In such hands workmanship must surely deteriorate. They have not in themselves the same standard of good work as their predecessors had; they are not as good judges of it—they cannot so thoroughly appreciate it; and consequently their chief standard is what will pass the architect's approval, as to quality, and what can I get it done for as to price — both which considerations tend inevitably to lower the quality of the work, and to raise a trial of skill between architect and contractor—the one trying in vain to get for his employer what the contract sets forth in such constant iteration,—"Thoroughly skilled labour and materials the best of their several kinds," and compelled in many cases to put up with, and give his certificate for, work which he knows well (and the builder knows too) is not of the quality that he bargained to get, but which is not so glaringly bad as to enable him to prove to the satisfaction of a judge and twelve jurymen that it is not what was contracted for. The builder's interest is only to make money by a job, and pass on to another; and the system of competitive tenders has tended to induce a sharpness of practice between architect and contractor which has gone a long way to overturn that feeling of mutual confidence founded on mutual respect which characterised the relation between them in former times, until a modern set of plans and specification is become a mere trial of skill and ingenuity between the parties. I wish I could even hope that such a state of things could be undone again. I wish we could look forward to a time when the architect would select his contractor from his known worth and intelligence, and pay him a fair price for good work actually done. But this is impossible. There is an amount of convenience to the employers in being able to look forward to the completion of their work at a certain fixed sum, that the system of contracts for a lump sum will always prevail—we shall never be able to get rid of it. We must, therefore, make the most of it by care in the preparation of our plans and specifications, by looking to the character of our builders, and by setting our faces against the acceptance of unduly low tenders. No man can be expected to do work at a loss, if he can avoid it; and if we are pressed with the usual argument that the tender should be accepted, and could be safely accepted if good security be given, it is our duty and our interest to press on the employer the consideration that he will inevitably lose more than the saving of cost in the lessened value of the work, and that a contract, if drawn up with all the ingenuity of man, is only of use with an honest contractor. A man who has nothing to lose will laugh at clauses engrossed on parchment; he is safe in his very impecuniosity. The character of the contracting parties, and the absence of any unfair advantage on either side, are the best and most satisfactory contracts.

WHAT IS ART?*

If it be true, as has been surmised by a great critic of human nature, that the same words do not convey precisely the same meaning to any two minds, surely of no word could this be predicated more indisputably than of that short but hardly worked monosyllable "art." The word is of late years in everybody's mouth; one can scarcely open a magazine without stumbling over an essay on art in some shape or other; but words, as Hobbes told us, are "the counters of wise men, and the money of fools;" and, assuming wisdom for a moment, it may not be quite useless to inquire what it is which this word really stands for with us; of what ideas, or class of ideas, is it the "counter"? To a good many who use it the term probably suggests indistinct images of picture galleries and sculpture ranged upon orderly pedestals; of an annual crush at the Academy rooms; or of Continental guide-books and ciceroni. To a selected few, who possess the golden key to the acquisition of a "taste" in art, it may rather seem to indicate a privileged lounge through the private studios of sundry painters, or a sale of "old masters" at Christie & Manson's, where the initiated may hold sweet converse in that peculiar shibboleth of conventional phraseology which Byron, referring to one branch of art, contemptuously stigmatised as

> "The paltry jargon of the marble mart
> Where pedantry gulls folly."

There are those to whom art furnishes a trade as regular and lucrative as other more creditable pursuits; whose occupation is to make merchandise of the brainwork of better men than themselves, and who know to a guinea the market value of each work; and there are those more hardworking and praiseworthy mortals, to whom "Art" stands as the lifelong endeavour to master the difficulties and problems of one or other form of artistic expression, laborious bit-by-bit, perfecting of the voice or the hand and eye in the self-assigned task of overcoming mechanical difficulties of execution, or of imitating, with arduous exactness, certain forms and aspects of external nature, but with little consideration as to what is the real end and good to be attained by all this conscientious expenditure of labour. And so one might go on enumerating, almost *ad infinitum*, the possible range of ideas which might be called up in various minds by the utterance of this one somewhat too familiar monosyllable. But is all this "art," after all? There are separate "arts," in a more technical sense—the art of singing, of portrait-painting, and so on,—but are all these collectively, or is any one of them that which we mean when we speak of "Art" in the highest and widest sense? Was it of such things that Goethe was thinking when he uttered the oracle that "He who has Art and Science (*Kunst und Wissenschaft*) wants not Religion"? Scarcely, one would think. What is it then, this unknown God to whom so many altars are inscribed, and whom divers ignorantly worship? Can our philosophers give us any assistance here?

Now it does so happen, rather curiously, that within a recent period, the two men who may be said to be the leaders of the most strongly opposed schools of thought among us, did on two very similar occasions give forth a kind of brief confession of faith as to what they considered art to be; both taking the great German artist and critic as their prompter, and both, though in sufficiently diverse fashion, coming to very much the same result. It may be suggestive to glance at this. In his rectorial address at Edinburgh, Carlyle, after alluding to the ideal school of culture described in "Wilhelm Meister," continued:—

> "Wilhelm left his own son there, expecting they would make him a master of arts, or something of that sort; and when he comes back for him, he sees a thundering cloud of dust coming over the plain, of which he could make nothing: it turned out to be a tempest of wild horses, managed by young lads who had a turn for hunting. His own son was among them, and he found that the breaking of colts was the thing he was most suited for. This was what Goethe calls art, which I shall not make clear to you by any definition unless it is clear already. I would not attempt to define it as music, painting, poetry, and so on; it is in quite a higher sense than the common one, and in which, I am afraid, most of our painters, poets, and music men would not pass muster."

Truly, one may fear not, with a few exceptions. This is rather ambiguous, however, and perhaps those who heard it at the time might have a reasonable doubt whether it was "clear already." Let us see whether Mill, in his address at St. Andrews University, has said anything to define the subject a little more clearly for average comprehensions. He tells us that,—

> "There is a true meaning in the saying of Goethe, though liable to be misunderstood and perverted, that the beautiful is greater than the good; for it includes the good, and adds something to it; it is the good made perfect, and fitted with all the collateral perfections which make it a finished and completed thing. Now this sense of perfection, which would make us demand from every creation of man the utmost which it ought to give, and render us intolerant of the smallest fault in ourselves or in anything we do, is one of the results of art cultivation. No other human productions come so near to perfection as works of pure art. In all other things we are, and may reasonably be, satisfied if the degree of excellence is as great as the object immediately in view seems to us to be worth; but in art, the perfection is itself the object. If I were to define art, I should be inclined to call it the endeavour after perfection of execution. If we meet with even a piece of mechanical work which bears the marks of being done in this spirit,—which is done as if the workman loved it, and tried to make it as good as possible, though something less good would have answered the purpose for which it was ostensibly made,—we say that he has worked like an artist. Art, when really cultivated, and not merely practised empirically, maintains, what it first gave the conception of, an ideal beauty, to be eternally aimed at, though surpassing what can be actually attained; and by this idea it trains us never to be completely satisfied with imperfection in what we ourselves do and are: *to idealise, as much as possible, every work we do, and, most of all, our own characters and lives.*"

In these noble concluding words, which might well form a text or motto for all the centres of education and culture in the land, Mill comes round to something very like the conclusion hinted at by Carlyle, viz., that "art," in its broadest sense, is a maintenance of the highest ideal of life, the striving after an ideal standard never to be fully comprehended, always beyond our reach, yet always to be aspired after as it rises ever higher and higher. But for this last sentence it might have been objected that his definition was somewhat too hard and material ("the endeavour after perfection of execution"), as Carlyle's, on the other hand, is certainly too vague and abstract, and makes too little account

* By Mr. H. H. Statham, Jun. From a paper read before the Liverpool Literary and Philosophical Society.

of those concrete forms of expression commonly known as the fine arts. The real relation of these latter to the mental kingdom of art, to the "ideal beauty" spoken of above, is much and strangely misunderstood, and is not, perhaps, duly indicated, even in the latter of our two quotations, fuller and more precise though it be than the former. Both philosophers seem to be afraid of committing themselves to giving too high a place to a class of pursuits which unquestionably are made the pretext for an infinity of cant and humbug, and which are often practised successfully (in the eyes of society) by persons of anything but high intellectual endowment or culture. But, in fact, those concrete forms of art, music, painting, sculpture, though too often—

> "Profaned by every charlatan,
> And soil'd by all ignoble use——"

are, in fact, the outward and visible signs of an inward spiritual grace, the media through which that indefinable and longed-for beauty is given for the time visible form and feature, the bridge which gives passage from the finite to the infinite. But it is the bane of art, and what gives ground for the half-contempt with which the calling of artist is regarded by many strong and earnest men among us, that the means are constantly mistaken for the end, the physical and material expression regarded, to the exclusion of the metaphysical beauty which underlies this; the mere execution of the craftsman becomes the object of attention, and in place of being the exponent of an ideal world, is rather made a screen to shut it out from us. Too often this is the case with the professed artist himself, who, being mainly occupied in labouring at and perfecting one special form of expression, is under a ten-fold temptation to make that his end, and, unless endowed with an exceptionally high imaginative faculty, almost to lose sight of the ideal object of the art which he practises. How this aim after mere technical skill appears to the artist of really poetical temperament we may learn from a passage in the desultory writings of that remarkable genius, William Blake, the painter and engraver, whose works are only just now beginning to receive something like recognition from a minority of his countrymen. "A man," says Blake, "sets himself down with colours and all the articles of painting; he puts a model before him, and he copies that so neatly as to make it a deception. Now, let any man of sense ask himself one question,—Is this art? Can it be worthy of admiration to anybody of understanding? . . . No man of sense ever supposes that copying from Nature is the art of painting; if the art is no more than this, it is no better than any other manual labour; anybody may do it." The last statement, of course, is an exaggeration; and, moreover, it must be said that there is a high degree, though not a high quality, of pleasure derivable from the contemplation of perfect executive power in any branch of art—from such fruit-painting as that of Lance, for instance, or from the performance by an accomplished singer of one of Rossini's brilliant pieces of vocal display. But it is no less certainly true that all the higher and more serious value which a work of art can have is in direct proportion to the thought which it contains, to the degree in which it feeds and stimulates the imagination. Finish of form in art is simply the necessary means (absolutely necessary, be it admitted) of setting forth the idea and preserving it for future generations. That this is comparatively little recognised, is partly due to the fact that so many persons interest themselves only in one form of art-expression. A man has a "taste," as it is called, for painting, or for poetry; or he is that most relentless of bores, a "musical man." But those who cultivate no perception but for one form of art-expression naturally come, by little and little, to lose sight of the ideal which underlies it, and dwell only on the material facts and technical skill displayed, about which they get up a disproportionate and even absurd enthusiasm. It is as applied to this class of amateurs that the word "connoisseur" (*quasi a non cognoscendo*) becomes so notable a misnomer, since they are precisely the persons who do *not* "know" or appreciate the genuine value and meaning of a work of art, but only its conventional or market value. It is when art is generalised; when the several forms in which beauty can be embodied for us are compared and found to be only various expressions of the same thing, that we learn to place the materialism of art in its due subordinate position, and to recognise in its various productions not the means to furnish a drawing-room decorously, or to prop up a society of music-makers, or furnish occasion for the rival display of mechanical sleight-of-hand; but rather the loved and joy-giving symbols of something perfect to be aspired to, channels of escape from the meannesses and littlenesses of every-day life into

> "Regions mild of calm and serene air."

Viewed in such a light, art is surely something which it is good to look into,—something which a society of civilised and educated people might reasonably give their serious attention to, in striving to read aright its deeper and more recondite meaning. That we, however, as a nation, are far enough from any such serious and thoughtful appreciation of art, will, it is to be feared, be but too apparent even on a very general survey. Take, for instance, the art of painting, and its reception and treatment by the public, so far as exhibition-rooms afford a standard for judgment. The fine new suite of rooms of the Royal Academy shows as a motto round the entrance saloon the musical lines of Spenser:—

> "The hearts of men that humbly here admire
> Fair-seeming shows, may lift themselves up higher,
> And learn to love, with zealous, humble duty,
> Th' eternal Fountain of that heavenly beauty."

The selection is a most happy one, and perhaps it would be difficult to find a passage more truly indicative of the highest scope of the painter's art. But looking at a large proportion of the works annually exhibited, there is surely some difficulty in tracing any connexion between their subjects and treatment and the sentiment in Spenser's lines. Among defects peculiar to English art, nothing is more remarkable than the apparent aimlessness of a large portion of its productions: one cannot guess why many of the pictures one sees should have been painted at all. This common deficiency in English art was noticed by Mrs. Browning, in her coarse but clever poem, "Aurora Leigh;" where, after speaking of the comparative narrowness of French sympathies, she observes that in France nevertheless,—

> "Art walks forward, and knows how to move;
> The artists also are idealists,
> Too absolute for nature, logical
> To austerity, in the application of
> The special theory; not a soul content
> To paint a crooked pollard or an ass
> As the English will, because they find it so,
> And like it *somehow*."

In other words, a French artist paints because he has something to paint; an English one too often because he has to paint something. But if we turn our attention rather to the public than to the artists, and notice what is most admired by those who crowd our exhibition-rooms, the result is far more unsatisfactory, far more decisively in negation of the sentiment embodied in the motto above referred to. What are the pictures which attract a crowd round them, which are the object of delighted comment, which paterfamilias is entreated "just to come and look at?" Are they those "fair-seeming shows" which bring high associations in their train, which open the gates for imagination to wander in fairer and ampler regions? No: almost invariably the pictures which are thus singled out for popularity are representations of some ordinary incident of commonplace, even vulgar, every-day life: a dapper young man asking the "governor's" consent, while his "intended" weeps on the shoulder of a fat mother,—a good little boy reading to a namby-pamby mamma,—a railway station,—a court stag-hunt, or some paltry incident of middle or lower class domestic life. Lord Byron, in a letter written from Italy, said with equal good taste and refinement, that he cared for no pictures but such as reminded him of what he had seen or might see; "as for all your saints and Madonnas, I spit upon and defy them." The British Philistine, with a good deal more excuse, perhaps, is in the same state of feeling as his lordship: he wishes for nothing in a picture but a reflection of himself, or of his own habits or prejudices. He is, to do him justice, too respectable to "spit," and too peaceable to "defy" anybody or anything; and upon all works of ideal art he gazes with a stolid indifference, more hopeless to deal with than the most violent positive dislike.

You may spend two or three consecutive days in the Academy rooms in the high tide of the season, and scarcely hear one remark from any one of the crowd who move with difficulty through the rooms indicating the slightest idea that a picture, if it is worth anything, is a thing worth serious study; that the artist's thought will not be laid hold of but by the spectator who brings thought of his own to meet it; or that the whole thing is anything but a more or less agreeable lounge, where it is the fashion to go, and [illegible] one can meet one's friends: indeed, but for this last motive, might it not be said, as it was of the concourse at Ephesus, that "the most part knew not wherefore they were come together?" It is not surprising that one or two of our most thoughtful artists have altogether declined competition for public favour in such an arena. And it can hardly be said that this nonchalant attitude towards the art of painting as publicly exhibited is compensated for by any very large amount of intelligent appreciation thereof in private life. It is true that the "patronage" of art (as it is termed), the ambition to possess a fine collection of paintings, is no longer considered as the exclusive privilege of the nobility; that this ambition is largely indulged by a class who a generation or two back would have scouted such an outlay as a frivolous waste of money. And there can be no question that among the wealthier mercantile men of England are to be found those who have both a genuine enthusiasm for, and a very competent critical judgment on, works of art of a high class; and that a perception of the value and dignity of art is slowly permeating social strata which were once considered to be necessarily innocent of any such predilections. But is there not, in the mean time, a vast amount also of mere ostentatious display of the power of the purse in such matters, a sort of feeling that it is "the thing" to have good pictures, a display of what is called a "valuable painting" exhibited just as another man exhibits particular old port, as something he was lucky in getting, and which every one cannot get? And is this a worthy way of looking at a great branch of imaginative art? And still meaner is that appetite for speculation in works of art which is too frequently met with, which leads a man to look out for pictures that are likely to rise in the market, and to boast (as we must all have heard people do) that he can get twice as much for that picture, any day, as he gave for it. It is to be feared that this mercenary view of art is only too much encouraged by the grasping and money-making propensities of some of the artists of most popular name among us. It was remarked by an eminent French critic, the late M. d'Henriet, whose admirable essays on art were familiar to readers of the *Revue des deux Mondes*, that many of the English artists, though they devoted a great deal of time to the study of the greatest examples both of ancient art and foreign contemporary styles, seemed to carry none of the fruits of it into their practice; "they make experiments," he says, "with a picture-dealer, and turn out rapidly the style of pictures which will be popular in the market." It is known that this is precisely the case with regard to some of the most popular English painters; and the result is what might be anticipated from such a system; the prices are forced up to a conventional standard by the avarice of dealers, and the painter, finding that he can get his own price for anything with his name to it, is content to turn out pictures with no recommendation except the power of manipulation which long practice has given him, and to repeat himself to any extent, until one is absolutely weary of the sight of his mannerisms. Hundreds of pictures of this kind are bought, at prices which are quite ridiculous, by persons who positively would not give a shilling for the same work without the artist's name on it. And this sort of folly and these forced prices foster the idea that art is only a luxury for the few; a notion which seems at least to be practically acted upon. In how many of the drawing-rooms of persons of average means do we find on looking at the walls any indication of the owner's tone of mind, anything to show that the pictures or prints hung there are introduced from any other motive than merely to fill up the wall and give the room a furnished look? Prints or photographs of some well-known popular picture, or some of those great coarse commonplace engravings which "Art-unions" dispense to their subscribers, mostly form the staple, with perhaps some starved little statuette of a Venus or a dancing-girl; and rarely indeed is there anything which suggests a new and original idea. Yet something far better than this is attainable, were it wished for, without pre-supposing extravagant outlay. I have certainly known rooms, and those of no wealthy owners, which it was a

pleasure to go into, not because their walls were decorated with expensive purchases, the work of well-known or famous artists, but because all that was hung there had a meaning and significance, and whether it were print, or photograph, or water-colour, showed unmistakably that it had found place there not as a mere piece of furniture, not because it filled up the wall or went well with the carpet or curtains, but because it was something that its owner loved, that answered to some phase of his own mind, and furnished the starting-point for some pleasant train of thought and association. Thus it is that genuine art, even in its simpler forms of expression, can impart a character and grace of its own to a dwelling, which no mere tasteless or ostentatious expenditure can emulate.

* * * *

It has been said by Bacon, in one of those weighty concentrated sentences of his, that "In the youth of a state arms do flourish; in the middle age of a state, learning; and then both of them together for a time; in the decline of a state, mechanical arts and merchandise." Does not this last ominous sentence seem to fall upon the ear like the knell of the real greatness of our country? That such an idea is present with some of the most clear-sighted and thoughtful minds among us, is evident enough from what we sometimes read,—notably so in a passage from one of Matthew Arnold's late poems, entitled, "Heine's Grave," where, apostrophising the spirit of the departed German satirist, he says,—

> "I chide with thee not, that thy sharp
> Upbraidings often assail'd
> England, my country; for we,
> Fearful and sad, for her sons,
> Long since, deep in our hearts
> Echo the blame of her foes;
> We, too, sigh that she flags;
> We, too, say that she now,
> Scarce comprehending the voice
> Of her greatest golden-mouth'd sons
> Of a former age any more
> Stupidly travels her round
> Of mechanic business, and lets
> Slow die out of her life
> Glory, and genius, and joy."

It is to be feared that the class which is becoming in many respects the dominant one amongst us has little sympathy with anything that is great or elevated, little aspiration beyond its own restricted and mercenary ideal of life. If we are to rise above this, to escape from this "slough of Despond," it must be, as it seems to me, by informing the minds of the masses of society with some appreciation of a standard above themselves, with something like a love and desire for what is beautiful for its own sake, giving, as Wordsworth has said, "Nobler thoughts and nobler cares" than those of mere existence. We have plenty of schemes for the regeneration of society,—schemes theological, political, social, each claiming to be a universal panacea for all shortcomings of modern life: we have no lack of philanthropists,—some of them with more zeal than knowledge. But man shall not live by bread alone; nor will charitable schemes, almshouses, extension of suffrage, suffice to fill the void, and to convert mere blank existence into anything which can in a true sense be called *life*. To do this is the province of art, taking the term in the wide sense, as signifying the development of the beautiful side of life,—the exhibition and setting forth through whatever form or language of ideal beauty. Progress in this direction must necessarily be gradual, for there are many prejudices to overcome before the ordinary Briton will consent to give anything like serious attention to art at all. Much of the highest art, for instance, deals with the most passionate feelings of human nature exhibited in all their force; but there is nothing from which your typical middle-class Englishman recoils so much as the display of naked passion; it is something which puzzles, we might almost say, frightens him. There is much education of mind to go through, too, before the highest language of art, the highest forms and types through which the beautiful can be made manifest, can even be understood at all by the majority; and it is towards altering this state of things that our national education should be more specially directed than it is.

Lead in Thornbury.—In a deep cutting near Gravesend, on the new line of railway between Yate and Thornbury, the men have come on a load of rich lead ore. Some years ago shafts were sunk near here, but the work was abandoned. The present discovery will most likely give a new impetus to the scheme.

"COLESHILL BUILDINGS," PIMLICO.

The pile of dwellings in Ebury-street, Pimlico, opened in November by the Duke of Cambridge, as we briefly mentioned in our last, has been erected by "The Improved Industrial Dwellings Company," better known as Sir Sydney Waterlow's Company, which was founded in 1863 for the purpose of affording to the working-classes healthful and comfortable homes at fair rents, and getting in return a fair per-centage on the money expended. To obtain a reasonable commercial profit on the capital is, in the opinion of the directors, "an absolute necessity, in order to secure the progress of the work of reconstruction which the company has undertaken, and the first consideration is, therefore, to provide dwellings thoroughly adapted to the requirements of those for whom they are intended, and of so attractive a form and appearance as to obviate the objection often expressed to 'model lodging-houses,' as they are sometimes rather ostentatiously called." They properly laid down as a rule that every tenant must have complete and *exclusive* use of all the essential accessories to a home, such as water supply, sink, copper, dust-shoot, coal-place, and water-closet. In some cases, economy of space and cost of building have been sought to be obtained by arrangements whereby two or more tenants have had the use of those requisites in common; but the divided use of such adjuncts to the dwelling very much diminishes its value, and the few cases attempted by the company proved comparative failures. There can be no doubt as to the necessity of providing these appendages to every dwelling.

At the present time the expenditure and committals of the company on capital account amount to about 200,000*l*. Of this sum, 125,000*l*. have been subscribed by the shareholders, 52,000*l*. have been borrowed from the Public Works Loan Commissioners, under "The Labouring Classes Dwelling-houses Act, 1866," and negotiations have been entered into with the commissioners for an advance of the balance. We give a list of the dwellings which have been erected by the company:—

	Tenements.				
	Three Rooms.	Two Rooms.	One Room.	Shops.	Total.
Cobden-buildings, King's Cross-road	8	10	...	2	20
Nelson-buildings, Bridge-street, Greenwich	20	20	...	...	40
Tower-buildings, Brew-house-lane, High-street, Wapping	30	30	...	...	60
Stanley-buildings, Old St. Pancras-road, King's Cross	51	50	...	3	104
Palmerston-buildings, City Garden-row, City-road	36	36	...	...	72
Cromwell-buildings, Red Cross-street, Southwark	10	12	...	2	24
Derby-buildings, Britannia-street, and Wicklow-street, King's Cross-road	40	118	...	10	168
Gladstone-buildings, Willow-street, Finsbury	84	84	...	...	168
Waterloo-buildings, Bethnal-green Estate	21	48	3	...	72
Ebury-buildings, Ebury-square	40	25	...	4	69
Coleshill-buildings, Ebury street and Queen-street	50	60	...	10	120
Buildings in course of erection at Bethnal-green	...	130	...	...	130
Total completed and in course of erection	390	623	3	31	1047

The company also purchased at Bethnal-green an estate of about nine acres, which was chiefly covered with small dilapidated houses. Many of these have been pulled down and replaced by improved dwellings, and the remainder will ultimately share the same fate.

The net return upon the capital invested, after carrying the proper contributions to the leasehold redemptions, and other reserve funds, has been sufficient to pay a uniform dividend of 5 per cent., and to carry forward balances which at the 30th of June last had accumulated to 2,603*l*.

Let us look now to Coleshill Buildings, Ebury-street. Here there are five blocks of buildings, each six stories in height from the basement. The general plan of a block may be described as a parallelogram, having a frontage of 56 ft., divided into four sections by a party wall in the centre, and a passage in the middle of each wing. The two centre sections are set back about 3 ft. from the front line, for the purpose of giving space for a balcony of that width on each of the upper floors. Each section comprises one suite of rooms, to which access is obtained from the passages leading direct from the balcony. The balconies are reached by a fire-proof staircase, which is continued to, and gives access to, the roof. The larger dwellings, consisting of three rooms and a small kitchen, occupy the end sections of the building. The living-room in each dwelling is provided with a range having an oven and boiler. Leading out of the living-room is the kitchen or scullery, which contains in every case water-cistern, sink, a small fire-place, washing-copper, dust-shoot, and water-closet. The front room is a parlour having two windows.

The centre sections, comprising the smaller dwellings, consist each of two rooms and a kitchen. The plan is the same on each side of the party walls, and every floor or flat is a repetition of the other. In the ceilings of all the rooms a ventilator is placed, which communicates with air-shafts running through the centres of the blocks. The lower panes of the windows are filled in with ornamental ground glass, so that no window-blinds are necessary. The windows are constructed so that the two lower panes are not made to open, and the danger of children falling out, as well as the disadvantages of the ordinary window sashes, are avoided. All the rooms are 8 ft. 3 in. in height. Drainage is effected by means of stoneware pipes passing from the top of the buildings, down the corners of the wash-houses, into a syphon trap, with an upcast ventilating pipe, and thence direct to the common sewer. The dust-shaft carries the dust to covered receptacles at the base of the building, and each shoot is provided with an iron cover, so as to prevent the return of dust and effluvia. The dust-shafts are also continued to the top of the building, and will act as ventilators to the dust-bins. All the rooms are plastered and papered, the woodwork is grained and varnished, and the kitchens are plastered and coloured. Every tenant has his apartments completely to himself, and nothing is used in common except the drying and recreation ground.

An arrangement worth noticing is, that provision is made for a constant supply of water to each of the houses. By a clause in a recent Act of Parliament, the water companies are bound to provide water by meter to those who demand it. It occurred to the company that, by the erection of capacious tanks at the top of each block, they might obtain the means of a constant supply of water to each family at a cheap rate, if they could secure themselves against the inmates wasting it. For this purpose they have fitted the water-pipe in each house with a spring of an ingenious construction, which, when the tap is turned on, allows a moderate supply of water to be drawn, and then stops of its own accord. This effectually prevents the negligent waste of water, and nothing but downright malice can cause it to run to waste. The effect of this will be, that each family in all the tenements will have a constant supply of water in his home every day in the week. This arrangement was made by Messrs. J. Tyler & Sons, of Newgate-market, who have also perfected a stand-pipe, which has an ingenious contrivance of internal valves, so that, even if any one should carelessly leave the tap turned, the valve would shut after a short time, and the water would cease to run. The apparatus well deserves attention, and will enable water companies to do more for some of our courts and alleys than they have hitherto been led to effect.

We will mention that the whole of the stoves, cooking-ranges, and cast-iron mantels, numbering in all more than a thousand, were supplied by Messrs. Yates, Haywood, & Co. These have been made under the immediate direction of the architects, and, for simplicity and cheapness of construction, are worth attention. The ranges, with oven and boiler, cost 22*s*. 6*d*. a piece; the iron mantel-pieces, with trusses, 14*s*.; and the scullery-stoves, 6*s*. 6*d*. a piece.

The architects were Messrs. Beck & Lee; the builders, Messrs. J. Perry & Co. The "Ebury Buildings," close by, were erected by Messrs. M. Allen & Son. The cost of the Coleshill Buildings is put down by the architects at 51*l*. a room.

One of the chief features in the construction of the dwellings, claimed to be peculiar, is the use of the patent stone manufactured by Messrs. Allen & Son, who built the company's first houses. This material is used for lintels, stairs, window dressings and sills, slabs, and so on;

and it is estimated that by its use a saving of about 20 per cent., as compared with other materials, is effected. In the first-built houses it was used for chimney-pieces, amongst other things; but its employment in this position is discontinued. The stairs at Palmerston-buildings, four or five years old, appear much worn,—the traffic being considerable. The material, we are told, is a concrete of gas breeze and Portland cement, in the proportion of five parts of the breeze to one of cement. A little pure cement, liquid, is first put into the mould, and gives a face to the work that requires no further manipulation.

In speaking of the buildings of a company so well intentioned as this we are unwilling to find fault, but we have an objection, and are bound to state it. We are forced to complain of *the scant of bedrooms*. For a family, the dwellings which have but one chamber are incompatible with ideas of propriety and decency, and the same objection applies to the whole unless the intention of reserving a parlour or bettermost sitting-room be abandoned in favour of providing an additional chamber. We commend this point with great seriousness to the consideration of the directors.

The rent charged, if we understand rightly, is 5s. 9d. a week for the dwelling with one living room and one chamber, and 7s. 6d. a week for that with parlour additional.

The completion of these buildings will close the operations of the company, so far as the employment of its present capital is concerned; but they are quite ready, it seems, if more capital be subscribed, to go on again.

BRIDPORT, DORSETSHIRE.

SANITARY INQUIRY.

FOR ten years past the sanitary condition of Bridport has been the subject of grave and anxious discussion. An inquiry has been often asked for and demanded; but things have gone on from bad to worse. Matters, however, have culminated at last, the Home Secretary having appointed a commissioner, Mr. Arnold Taylor, to institute an inquiry into the state of the town. The inquiry was to commence, in the Town-hall, on Wednesday, the 30th ult. Had the few mistaken obstructives who for several years opposed all local improvements ceased to pursue their mischievous and fatal policy, the town would have been spared a compulsory measure. No doubt the result of the inquiry will show what we have over and over again stated in these pages;—hundreds hurried to premature graves; hundreds more suffering a living death, the consequence of bad sewerage, defective water supply, unremoved filth, badly-constructed and badly-ventilated dwellings, and general neglect, public and domestic.

SANITARY SHERBORNE.

THEY have peculiar ways of bottling-in smells, and "bottling up" surveyors' and medical officers' nostrils that are too sensitive, in Dorsetshire. The local surveyor in Sherborne, like a sensible officer, reported the existence of bad roadside gutters, drains, and so on, and the medical officer pointed out the bad places in the town where want of sanitary precautions was likely to result in an epidemic, fever and other symptoms having shown themselves. The chairman of the Board mustered some of his friends, and proceeded to visit the places pointed out as dangerous. The result was that the chairman and his accompanying friends declared "that they were really surprised to find the places pointed out so clean, tidy, and free from smells." We have no doubt that several other people would be equally surprised to hear this information. At the "full moon," it appears, the lamps are not lighted in economical Sherborne, nor even on dark nights when they are absolutely necessary. Does this arise, we wonder, from the fear of having a light thrown on such a dark subject as the black spots in the town? The surveyor was ordered to see to the gas-lamps, the road repairs, and the butcher nuisances; but the medical officer was ordered to be reprimanded and to be more careful in future of speaking or even alluding to foul smells, as it was likely to injure the town. This is certainly a novel method of carrying out sanitary improvements. What hope can there be of public life and safety if sanitary and medical officers are snubbed for being active in doing their duty, and pointing out a danger? If even the possibility of danger existed, do we not all know and agree that "prevention is better than cure?" It is likely that if we are called upon again to notice the matter, we shall supply the local authorities of Sherborne with facts from personal investigation that they should not ignore. Sherborne no more than Glastonbury is in a position to challenge inspection at this moment in respect of its lanes, roads, sewers, and closets. The local Board, chairman, and others, ought, therefore, to set about doing what is necessary for the health of the town, instead of denying patent evils, and snubbing their officers for performing the most important duties of their office.

WORKS DONE AT THE CENTRAL PARK, NEW YORK.

THE thirteenth annual report of the Board of Commissioners of the Central Park, at New York, for the year ending December 31st, 1869, has been issued in a printed form. The report is illustrated by numerous photographs and engravings of various subjects of interest in the park, such as statues and buildings, walks, cascade, and other views, animals, &c. We condense a little what relates to works done and proposed, and other transactions, in course of the year reported on.

The forces of the park have been generally engaged in the development on the grounds of plans heretofore adopted, and in maturing the plans for future operations. The Belvedere at the high ground of a central portion of the park is advanced so that the form of the tower at its south-easterly angle, and the open shelter at its south-west corner, are well defined and readily observable. This structure is designed to afford a prominent place of look-out over the whole extent of the park. The House, situated just north of the play-ground, is complete, and is much used by the boys, for whose convenience it was erected. The Children's Cottage is complete, and is also very much used. The Dairy, a rural structure of stone, is well forwarded. It is arranged for the convenient serving of milk and similar refreshments. The ceiling of the terrace has been laid with encaustic tile of varied design, and the decoration of the ornamental ribs of iron has been finished. All that remains to complete this ceiling is the introduction of the glass panel that is to admit the light upon the statues designed to occupy the central space immediately under it. The laying-out, fertilising, and planting of the maze or labyrinth, on the east of the old reservoir, is completed. This comprises within its inclosure 3,700 lineal feet of gravel walk, and 2,250 trees, as borders or screens to the walk, and is intended to render an attempt to reach its central point or to find a place of exit somewhat amusingly intricate and difficult. A fountain has been arranged at the Harlem Lake, by which a high jet of water is played whenever the supply in the reservoir is such as to admit of its use. A large stone, 17 ft. square, of polished Westerley granite, for the basin of the terrace fountain, has been contracted for. The bronze figures for this fountain are now in course of casting at Munich. The foundation-course for the horse drinking-fountain, at the circle, is set, and a large portion of the ornamental stonework is on the ground. A movable house has been nearly completed, for a cover to prevent damage to the music pavilion by the storms and snows of winter. For the purpose of compacting the bed of new roads, and also the surface of these roads, the Board has imported a steam road-roller, weighing about 15 tons. Invitations were sent to prominent mechanics and others interested in this class of machinery, to attend a trial of its propelling and compressing capacity. It was readily propelled from 110th-street, up the Great-hill, on a grade of 4·61 ft. in 100, and returned down the hill without difficulty or apparent stress on the machinery. The roller has been for some months used on the drive and circle in compacting the earth and surface road-metal. Professor B. Waterhouse Hawkins has been engaged in advancing the group of fossil animals more fully alluded to in the last annual report. A very wide interest, both in this country and in Europe, has been excited among scientific men by this interesting and novel undertaking. The great group of ancient animals formerly living, during the secondary geological epoch, on the continent of America, now being modelled and restored to the natural size and appearance of the animal as in life, by Mr. Hawkins, for the Central Park, consists of the gigantic hadrosaurus, of the exact dimensions (one 26 ft., the other 39 ft. long), as proved by the fossils described by Dr. Joseph Leidy in the "Smithsonian Contributions to Knowledge, No. 192;" also models of Laelap's *Aquilunguis* fossils, described by Cope, together with the aquatic *Elasmosaurus* and *Mosasaurus*. The second division of the group will illustrate the post-tertiary period, and represents the mastodon, the mammoth, megatherium, megalonyx, glyptodon, &c., thus uniting the early periods of animal life with the earliest evidence of man's existence, and so constituting a complete visual history of the American continent from the dawn of creation to the present time. The excavations for the structure for this department of the museum are now going on. The Board has been exceedingly desirous to proceed with the Zoological Gardens. The chief occasion of delay is the want of a proper outlet for the drainage of the ground and the regulation of the streets and avenues about it. A sewer has been commenced, which will in part accomplish this desideratum; but it will probably be at least a year before it is fully completed. The avenues and streets that surround these grounds are in such a state as to render them almost impossible of approach, and extensive excavation and filling is now going on in the vicinity. With these difficulties to contend with, over which the commissioners of the park have no control, they have done as much work in the last year as seemed practicable. In the habitations for the animals of the gardens, every arrangement that will conduce to their healthfulness and to the facility and convenience of observing them will be provided. Some progress has also been made in the preparation of designs and models for the houses for tropical carnivora. The plans of the proposed astronomical observatory have been much discussed, and extensive inquiry and examination has been made into the designs adopted for similar institutions.

Experiments were being made with Cooper's patent road-watering process, the commissioners having got a few tons of the deliquescent salts from England for trial.

The rate of tax for the year 1869 is 2·27 yielding, on the increased valuation above stated an increased tax of 2,810,150·54 dollars.

The total expenditure for construction, from May 1, 1857, to January 1, 1870, is		$5,775,387 14
The cost of the land of the park to the city is		5,028,844 10
Total cost of park to the city up to this time		$10,804,231 24
Total increased tax in three wards...		$2,810,150 54
The annual interest on the cost of the land and improvement of the park up this time, at 6 per cent. ...	$648,253 87	
Deduct 1 per cent. on 300,300 dols. of the above stock, issued at 5 per cent.	3,993 00	652,246 87
Excess of increased tax in three wards over interest on cost of land and improvements		$2,157,903 67

A report of works outside the park follows the main report, and there is a voluminous appendix, with relative tables, diagrams, and plans.

STONEWORKING MACHINERY.

WE have examined with much satisfaction the working of some machines for sawing and moulding stone set up in Battersea, by a company which has purchased the patented inventions of Mr. G. Hunter and Sir William Fothergill-Cooke. The machine in question consists of a bed made to travel longitudinally, with a shaft mounted over it for receiving the revolving cutting or moulding head. So far, the machinery resembles that used for sawing; the head, however, instead of being a plain disc, with cutters, is shaped to the profile of the required moulding, and has the cutters fixed in it according to that outline. The rough block being fixed on the bed, which is made to advance while the head revolves, the upper face of the stone is cut very nearly to the shape of the desired moulding; the edges, however, are rather blunt, and the surface shows the tool-marks. When this operation has been performed, a scraping tool, formed exactly to the moulding, is fixed over the block; and, the block being made to traverse several times under this scraper, has its face finished true and smooth, with sharp, clean edges, and the perfect profile required. We saw some

strings and moulded steps well worked in a remarkably short time. The cutters being built up, as it were, can be made to give any required outline, and their form is such that they work a considerable time without needing grinding. A large amount of work for St. Thomas's Hospital has been done by one of these machines. Great saving of money and time is effected, and we should think the machinery can scarcely fail to come extensively into use.

Machinery for tunnelling, quarrying, and sawing stone is worked by the same company. Captain Palmer is the provisional manager, and Mr. John Imray the engineer.

ST. ANDREW'S, WELLS-STREET.

St. George's Hall, Langham-place, was the scene of a very interesting gathering on Wednesday evening last, — a parochial tea-party, which included the children of the boys', girls', and infants' day-schools; the children of the Sunday and night schools for boys and girls; the members of the Young Women's Friendly Society, and of the Young Men's Confraternity; the aged pensioners and communicants of the Church; and the women of the Parochial Mission, with their husbands. There were thus in the body of the hall about 700 persons, while the galleries were filled with inhabitants of the parish, who paid each a shilling to be lookers-on.

Mr. Herbert Barnard, presiding, made a happy little speech; and then the school-prizes were presented to the winners: Mr. Hughes, M.P., speaking afterwards. Miss Robertine Henderson and other volunteers sang some songs agreeably; and "Blue Beard" was brought from over the way, thanks to Professor Pepper, for the special delectation of the children. Chief praise is due to the vicar, the Rev. Benjamin Webb, for the success which has attended these gatherings of all classes of his parishioners. They constitute a parish "union" of a more agreeable kind than usual. New schools of considerable extent have just now been completed under the direction of Mr. G. E. Street, and the reredos in the church, designed by the same architect, and cleverly executed by Mr. Redfern, is fast growing to completion. The whole, with its doubled tracery and involved groups in very high relief, has a mixed Spanish and German aspect, which is novel in London.

GLASGOW UNIVERSITY.

The old pile in High-street and adjacent is in course of demolition, and the new buildings on Gilmore Hill, erected from the designs of Professor G. G. Scott, R.A., have been formally opened. We give a view of them, and plan of the ground floor.

The University of Glasgow was originally founded by a Bull issued by Pope Nicholas V., and dated January 7th, 1450-1, exactly forty years later than its only senior, the University of St. Andrews. It was established under the name then given to such institutions, viz, *Studium Generale*, which included theology, canon and civil law, and the arts. It owed its existence chiefly to the exertions of Bishop Turnbull, who in right of his office was appointed under the original foundation chancellor and rector of the University. From the first it formed an incorporation, including the chancellor and rector, the various masters and doctors in the faculties of theology, canon law, and the arts, and the incorporated students in these faculties; and it received the power of conferring degrees upon those who had pursued their studies in the manner prescribed by the statutes.

The University, though then destitute of endowments, and dependent solely on the contributions of the students and of persons interested in the promotion of learning, soon attained considerable success, so that, within four years after the original foundation, the business of instruction was proceeding with zeal and efficiency in a building situated not far from the cathedral, in the street now called the Rottenrow, and adjacent to the chapter-house of the Dominican Friars. This building, called the Pædagogium, appears to have been leased to the University by the bishop upon payment of a rent; and, along with the halls for delivering lectures or carrying on instruction, a house was provided for the residence of the students.

As early as 1460, James, first Lord Hamilton, gifted to the Faculty of Arts a site in the High-street, for its operations, and steps were taken for erecting or adapting buildings in the locality which has been ever since occupied by the college.

To this place, then, about the year 1465, the teaching and residence of the members of the University were transferred in whole or in part; and the name of Pædagogium, or college, was applied to the new buildings.

Thus, with various success, the business of the University, and of the faculty of arts within it, was carried on until the time of the Reformation, when, along with other institutions of Roman Catholic origin, the University was thrown into confusion by the loss of the support which it had previously derived from the Church.

In 1574 renewed animation was given to the academic teaching by the advent of the celebrated Andrew Melville; and such was the success of the University at this time that the account of Melville's nephew, confirmed from other sources, is not to be looked upon as exaggerated, when he says that "there was na place in Europe comparable to Glasgow for guid letters during these yeirs for a plentifull and guid chepe mercat of all kinds of languages, artes, and sciences."

From the time of the first acquisition of the tenement in the High-street we find in the records frequent mention of the application of all the money belonging to the Faculty of Arts to the erection and repair of buildings; but the funds must have been of the most scanty amount, and the work must have proceeded very tardily; for in 1563 they were still incomplete, when the confusion attendant upon the Reformation disturbed the projects and workings of the College and deprived it of all its resources.

The buildings in the High-street and adjacent ground appear to have been erected at various times,—a small portion of them only dating earlier than the year 1632, when the restoration of the oldest University buildings began.

They consisted of four courts or quadrangles, of which, however, two only form part of the original structure of the seventeenth century, viz., the outer court fronting the High-street, and the second or inner court, communicating with the first by an archway below the tower or steeple. It is but fair to mention that the Glasgow University is an institution whose benefits are not confined to the city or neighbouring districts. Its students, upwards of 1,200 in number at present, and likely to be largely increased, are composed of natives of every county in Scotland without a single exception, and include also in considerable numbers Englishmen, Irishmen, and Foreigners—all of whom receive a first-class university education at a very moderate expense.

It has had remarkable teachers. Speaking of the last 100 years, Mr. Cosmo Innes says,—"No other school of learning, within so short a period, can boast of an array of teachers like Cullen and Black in chemistry and medicine; Hutchison, Reid, Adam Smith, in mental philosophy; Moore, Young, and Sandford, in Greek literature; John Millar and Jardine, in what may be called the art of education." Nor is it unimportant to remember that it was in Glasgow University that Adam Smith delivered those lectures on political economy which formed the basis of his "Wealth of Nations."

The necessity for removal had long been felt by those most intimately acquainted with the condition and management of the University. It was recognised so long ago as 1846, when a Bill for the sale of the present grounds and buildings of the Monklands Junction Railway Company and the transference of the college to a new site on Woodlands was passed by both Houses of Parliament, and received the Royal assent. The failure of that measure was only caused by the inability of the railway company to implement their engagements. The reasons for removal became still more urgent than before. But the University authorities found no favourable opportunity for the renewal of the scheme till the year 1864, when a proposal for the purchase of the college lands and buildings was made by the City of Glasgow Union Railway Company, and a sale was accordingly effected with that company, under their Act of Parliament, at the price of 100,000*l*.

Designs were then obtained from Mr. Scott, the necessary money was raised, and the new buildings, as we see them, have been completed.

They form a large oblong rectangular pile, about 600 ft. long, speaking broadly, by 300 ft. wide, and divided in the middle by a building which separates two quadrangles, each of which is about 180 ft. square.

The whole block of the buildings may be divided into,—

1. The south front, with the west angle tower at the north front, containing the art and science class-rooms, with extensive laboratories, in connexion with the natural philosophy and chemistry.

The great tower in the centre of the south front forms the main entrance for the students; on the first-floor is the court-room, with direct communication into the great forehall (yet to be built). Besides the belfry, clock-room, &c., in the upper stages, there is the cold-air chamber in the sub-basement, through which every hour 1,000,000 cubic feet of fresh air are to pass, for the supply of fresh and hot air for the heating and ventilating of the whole building, the cold-air chamber being fed through four large extraction shafts in the east and west walls of the main tower, terminating at a height of about 150 ft. The tower is 200 ft.; the wooden spire, covered with lead and slate, 110 ft. high. There are the examination-hall, and the great staircase at the east of the main tower; and the senate-room on the first-floor at the west.

2. The east building comprises all the medical class-rooms, with the laboratories in the basement. With each class-room is a professor's private room, in connexion with a mezzanine above, fitted up as a private library or museum, as the case may be.

The students' platform in all the medical and other demonstrating class-rooms is raised in a curvilineal system, worked out by Dr. Allen Thomson, to 8 ft., 9 ft., and 10 ft. above the floor line, and reached by a separate staircase: in those cases there are two separate entrances for the students.

3. The north front, the centre portion, with a circular end, containing the students' general meeting-room in the basement, the reading-room on the ground-floor, the valuable collection of books and coins by Dr. Hunter, on the first floor, from whom it derives its name, the Hunterian Museum. East of the centre building is the general museum, with its laboratories and workshops in the basement; west, the library, containing over 100,000 volumes, with extensive premises for workshops, &c., in the basement.

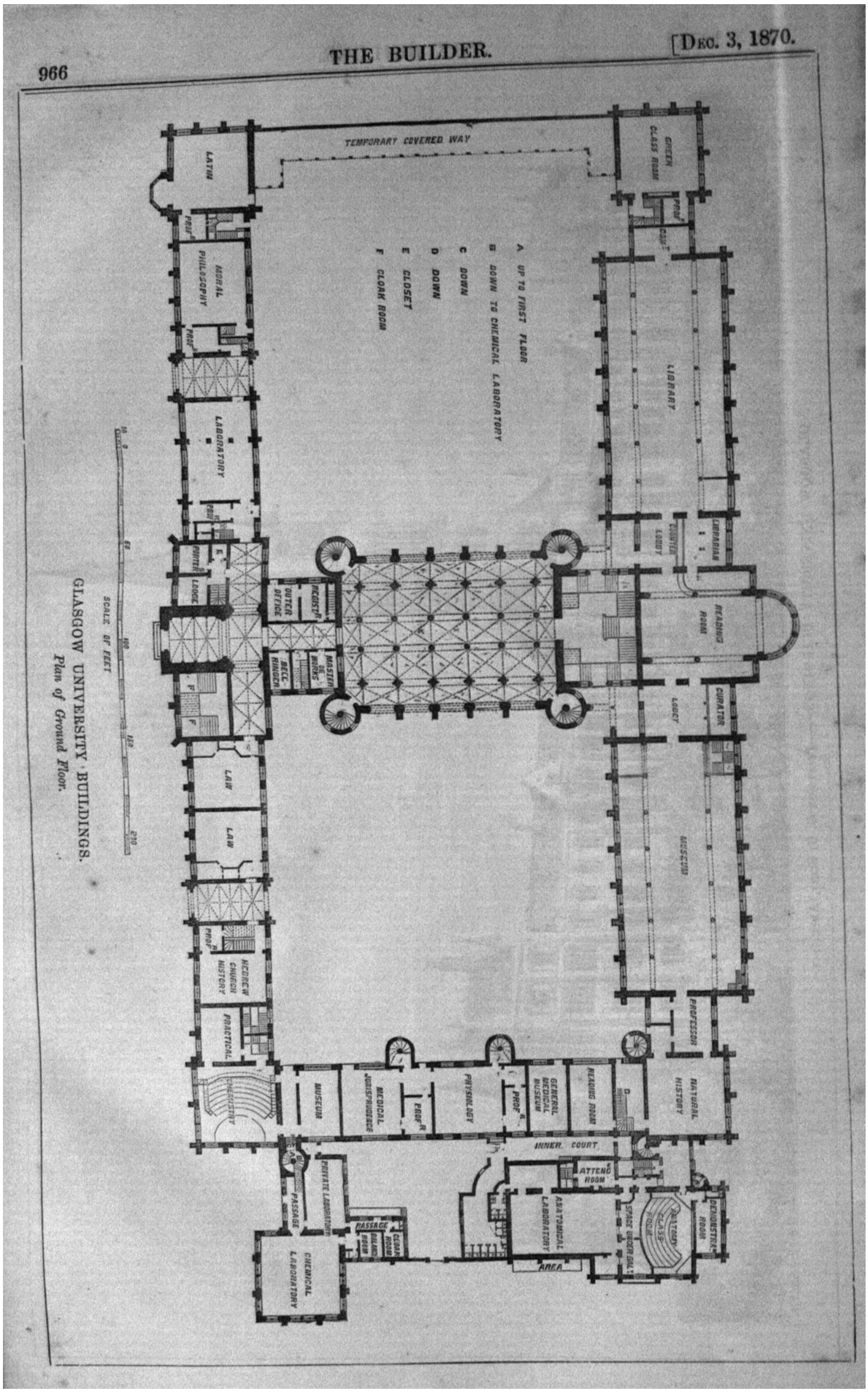
There are two carriage-entrances through the two gates on the south front, leading to the courts; a carriage-entrance on each side of the centre building, on the north front. The level being 16 ft. below the level of the court, the same is reached by a large staircase; the commencement to the large staircase in connexion with the great hall, for the whole of the foundations, is completed to the ground line. There are provisions for three large hoists, in the library, the museum, at the east buildings, to be worked by steam. The attics at the east and south buildings, 10 ft. 6 in. average height, are used for model-rooms and museum purposes.

4. The professors' court, at the west of the College buildings, consists of thirteen houses, in lieu of those in connexion with the old college; the whole standing on a lower level of 15 ft.; a block of two houses, on a line with the south front, forming the south block, the residences of the principal, the Right Rev. Dr. Barclay, and of Dr. H. Caird, professor of divinity; seven residences, forming one block to the west; four residences, forming one block, to the north, arranged for further extension. To the west is the students' recreation-ground, about 5 acres, with the new hospital, to be erected farther west, which will form the extent of the scheme.

The dimensions of some of the principal apartments are as follow:—Library, 129 ft. by 60 ft.; museum, 129 ft. by 60 ft.; central hall, 114 ft. 6 in. by 70 ft.; Latin, chemistry, natural history, and Greek class-rooms, each 40 ft. by 40 ft.; laboratory, 52 ft. 7 in. by 34 ft.; moral philosophy, 37 ft. 10 in. by 34 ft.; medical jurisprudence, 34 ft. by 30 ft.; physiology, 34 ft. by 34 ft.; small museums, each 30 ft. by 22 ft. 6 in.; reading-room, 73 ft. by 51 ft. Our plan shows the ground floor of the main building and the basement floor of the low buildings on the right-hand side.

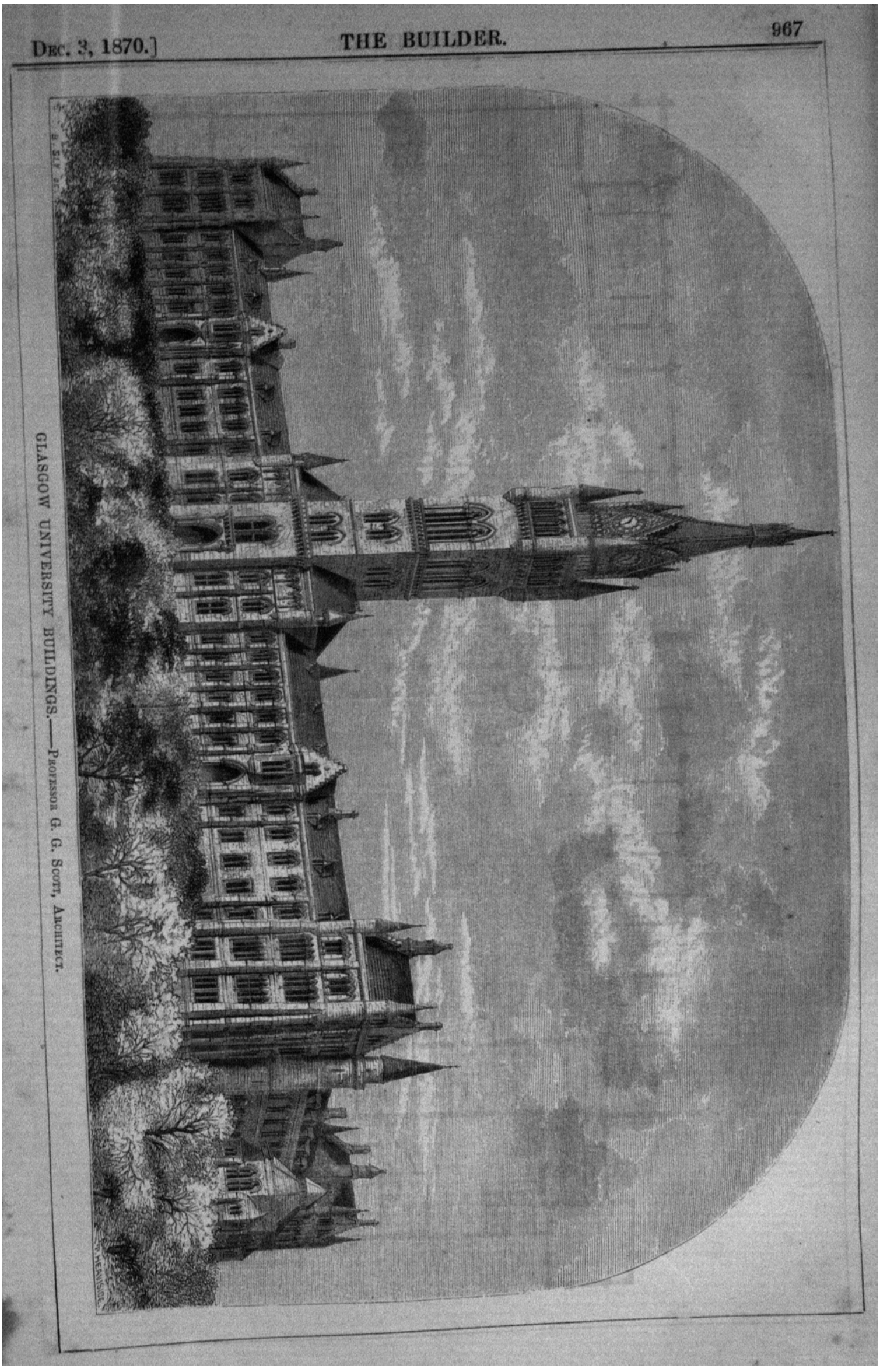
Mr. W. Conradi has been Mr. Scott's representative on the spot during the progress of the works. The amount expended is about 420,000*l*.

Coggeshall, Essex.—Endeavours are being made to obtain a town-hall for Coggeshall.



GLASGOW UNIVERSITY BUILDINGS.

Plan of Ground Floor.



GLASGOW UNIVERSITY BUILDINGS.—PROFESSOR G. G. SCOTT, ARCHITECT.

IMPROVEMENTS IN THE PORT OF DUBLIN.

The Dublin Port and Docks Board are now carrying out extensive improvements near the entrance to the Liffey, on the south side of the harbour, which, when completed, will add considerably to its position as a commercial port. The object of the improvements is to give an increased depth of water, so that vessels of the deepest draught can enter and remain afloat at all stages of the tide; in fact, to convert the river so to speak, into a large tidal or floating dock. The present river walls, built upwards of fifty years ago, were founded at a depth of only 1 ft. or 2 ft. below low-water; consequently the bed of the river could not be dredged close to the walls without endangering their stability. Mr. B. B. Storey, C.E., engineer to the Port and Docks Board, designed a new wall, to be built in the same line as the old wall, with the foundations so low as 25 ft. below low-water, to enable him to have the river dredged with safety to the depth of at least 20 ft. below low-water, thereby, as the rise of the tide is about 13 ft., giving a total depth of 33 ft. at high-water. To form an idea of the extent of the work, we may state that the new wall is 20 ft. broad at the base, and is 42 ft. 6 in. in height, and is built up to the level of about low-water with large blocks of rubble-faced to that height, with close-dressed calp or limestone face-work. From low-water to top coping, which is 5 ft. above high-water, is faced with close-punched and draughted granite ashlar, laid in horizontal courses, and coped by weighty granite cope 2 ft. in thickness, and covering the whole top of the wall, which narrows, by stepping at proper intervals, to 5 ft. wide at top.

About August of last year the Port and Docks Board received tenders for carrying this work into execution; and the coffre-dam necessary for the exclusion of the tidal waters, so as to enable the old wall to be entirely removed, and the excavations carried out the 25 ft. below the foundations of the old wall, until the bed for the reception of the new masonry was prepared, being the most important feature in the construction, it was thought best that the contractor should design and carry out this part of the works at his sole risk, as so much depended upon its proper stability and resisting qualities in going to so great a depth, having 38 ft. to 41 ft. of head of water to riverside, and 43 ft. in height of quay and roadway to be supported on the land side, and also as it was further expected that a large quantity of water would find its way into the pit, so much as 20,000 gallons of water per minute were expected to have to be pumped a height of 43 ft. The board selected the tender of Mr. William J. Doherty, C.E., of Belfast, contractor (although not the lowest by several thousand pounds, but known as having successfully carried into execution several important public works about Belfast, &c.). Operations were commenced immediately after the acceptance of the tender, and have been pushed forward to insure its completion within the requisite time,—namely, three years. The total length of wall to be rebuilt is 1,050 lineal feet. The coffre-dam has been completed for one-half the entire length, and the masonry of the new wall has been built for nearly 350 feet. The contractor has been enabled to avoid the great quantity of pumping anticipated, and instead of having to deal with 20,000 gallons of water, the actual quantity lifted is about 1,000 gallons per minute; so that the excavations and masonry are perfectly dry. *Clay puddle*, of which the dam is made, retained by close piling, driven below the foundations of the new wall, was not procurable when required, and the contractor substituted *peat moss*, easily procured by canal from the county Meath; and it is said to have more than realised his expectations of it. However, he has found a stratum of *clay silt* in the excavations, that provides him now with all the puddle required for the remainder. The masonry of the new mill is built entirely throughout with Portland cement, the mortar being formed in a pliant concrete mixed in suitable mills. This class of masonry and mode of mixing the concrete are quite new, being introduced by the engineer, Mr. B. B. Storey, and no settlement or irregularity exists. Pumping, pile-driving, mortar-mills, mixing and hoisting, are performed by five steam-engines, in the aggregate of 80-horse power. About 400 men are employed in excavating quarrying-stone, building, &c, and 35 to 40 horses in bringing the stone to the works.

The stone is lowered into place by means of three over-head travelling gantries traversing and spanning the entire width of foundations, having on each a set of jennies or movable crab winches of great strength, the uprights and runners of the river side of the gantry staging being supported on the piles of the outer row of the coffre-dam, and the supports of the inner line resting on the quay space within the works. In addition to the piling of the dam, there is also a row of close sheeting and strutting piles driven the entire length on the inner or land side, to support the roadway; the width between the coffre-dam and the back piling being 30 ft.; while timber struts and walls, at about 5 ft. vertically, and 10 ft. horizontally asunder, are placed throughout to resist the pressure of the water and foreshore against the coffre-dam on the river side, and the pressure of the roadway on the land side. The cost of this work will be, when completed, about 65,000*l.* to 70,000*l.*

THE BLOCK-BOOKS.

I think your readers will agree that the burden of proof in this controversy rests with Mr. Holt, for when any one challenges opinions generally received, it is for that person to prove that the statements on which those opinions are founded are false. Therefore I hope Mr. Holt will tell us his reasons for rejecting the following statements respecting the antiquity of the "Biblia Pauperum." These I quote in answer to his words, "I challenge literature to prove that a copy of the Block-book known as the 'Biblia Pauperum' was actually in any library, public or private, prior to 1485, or known then to be in existence." They are the opinions of Mr. H. N. Humphreys and M. Berjeau, who, by careful study of the Block-books, are well qualified to judge, and moreover they are the gentlemen specially referred to by Mr. Holt.

"I passed a portion of last autumn at Munich, where I undertook a careful examination of the Block-books contained in the Royal Library—one of the richest collections known. No. 24 of that collection is a 'Biolia Pauperum,' the blocks of which are pretty closely copied from the original Dutch edition, though somewhat enriched in the style of ornamentation, and other details. It is printed on both sides of the paper in printer's ink, and *bears the date* 1470, with the printer's mark. There is also another edition from the same block (No. 23) printed in distemper for colouring, and which bears the same mark and date. A third 'Biblia Pauperum' of the same collection, printed in printer's ink from entirely different blocks, and of very inferior execution, bears the date 1471. Here then are at once no less than three of the latest specimens of the 'Biblia Pauperum,' all printed long before 1485. There is also an edition bearing the name of its printer or engraver, Hans Sporer, of Nuremburg, dated 1475. He is a well-known man, and in his last work gives in addition to his name his address behind the Church of St. Martin. Those Block-books which are printed in printer's ink on both sides of the paper were evidently produced at a period long posterior to that during which the Block-books were printed in distemper, and on one side of the paper only, these peculiarities and their style of art, placing them, in the opinion of most bibliographers, full fifty years before the latest of the dates just referred to." (H. Noel Humphreys, letter to the *Times*, August 21, 1868.)

"To saddle upon Albert Dürer the drawings of the 'Biblia Pauperum,' which are scarcely worth the pencil of a glass-stainer of the twelfth or thirteenth century, is too bad. To think that the artist who drew the 'Canticum Canticorum' in the purest style of the Van Eycks was likewise Albert Dürer, is to show an ignorance of the Mediæval art perfectly astounding. The artist who made the drawings of the 'Biblia Pauperum' could no more draw those of the 'Canticum Canticorum,' than the artist (whoever he may be) of the 'Livre des Sauvages' could copy the 'Source' of M. Ingres. I must acquaint Mr. Holt with the stubborn fact that if Albert Dürer engraved the blocks of the 'Speculum Humanæ Salvationis,' he must have engraved them in the womb of his mother, for he was born in 1471. Then the 'Speculum' had had four editions, two Latin and two Dutch. As new editions of books did not follow each other in those early times as quickly as they do in ours, when they catch the fancy of the public, to say nothing of the time used in engraving and printing them by two different processes,—first, the woodcut with the 'frotton,' then the movable types with a press,—we may admit a period of at least twelve years before the curiosity for the folio edition of the 'Speculum' was exhausted. Just at the end of it Veldener cut the blocks in two, in order to illustrate a 4to. printed edition, which he published exactly twelve years after the birth of Albert Dürer." (M. Berjeau, *Notes and Queries*, October 31, 1868.)

"Mr. Horne possessed a volume in the original binding, which contained three of the most celebrated Block-books,—the 'Biblia Pauperum,' the 'Apocalypse,' and the 'Ars Moriendi.' Within the binding was the following memorandum:—'Hic liber religatus fuit per Plebanum ecclesiæ anno Domini 142 . .'—the last numeral being very indistinct, the date may fairly be taken as 1425. All three books were in circulation at that time; and allowing for their having followed each other at certain intervals, 1410, or thereabouts, would be an exceedingly probable date for the publication of the first of them." (Humphreys, "Hist. Art of Printing," 40.)

There is a copy of the "Biblia" in Lord Spencer's library, with the date 1467 on the bogskin binding. F. S. A.

THE PROPOSED TUNNEL UNDER THE MERSEY.

It would appear that the promoters of the Mersey Railway Tunnel scheme have not abandoned their project of uniting Liverpool and its Cheshire neighbour by subterreanean means. They are now preparing plans to submit to Parliament next session for an extension of their pesent authorised line, which is from the corner of Church-street and Paradise-street, Liverpool, to Birkenhead. They now propose to carry the line from Paradise-street to a junction with the new station in Ranelagh-street, at or near the site of the Roscoe Arcade; and, on the Cheshire side, from Woodside to a junction with the Birkenhead and Chester Railway, at or near to Green-lane, Tranmere. Mr. Dixon, the company's surveyor, professes to have secured most favourable levels from the Tranmere junction, under the bed of the river, and thence to Paradise-street and Ranelagh-street. There will, therefore, it is thought, be no necessity for resorting to engines on Fell's Mont Cenis principle, the ordinary locomotives being perfectly competent to mount the easy gradients proposed to be made.

RELAPSING FEVER IN LIVERPOOL.

A Report of the *Lancet* Sanitary Commission on this subject justifies a warning we have repeatedly given as to building on made-up ground where ashes, mixed with vegetable and other organic *débris* have been accumulated. The reporters attribute the fever to this cause. As to "the site" they say:—

"This superb site the jerry builders, contractors, and the Corporation have done, and are still doing, their very best to spoil. Whole tracts of land from which the surface-clay has been removed for making bricks have been filled in with millions of tons of chemical refuse, composed largely of sulphide of calcium. The houses are built upon it, and the sewers pass through it. The sulphide is slowly dissolved out by rain, and the solution gives off a stench of sulphuretted hydrogen when it enters into the sewers or escapes upon the surface. As in Manchester, so also in Liverpool, hundreds of houses have been erected upon midden refuse. . . . The most remarkable feature in the case is that this mode of dealing with the ashpit refuse is justified by the medical officer of health. Dr. Trench is reported to have visited this very spot [one indicated in the report], and to have perceived no smell. But it is a significant fact that a load of vegetable refuse was picked from the very surface, and that the Corporation officers stated that they did not dare to move the whole lest the stench should be too great. No houses can be healthy that are built on such a subsoil, and no sewers can be kept free from noxious gases under such untoward circumstances. The practice shows how easily the judgment of sanitary authorities may be warped by the question of expense. But better a thousand times that the Corporation should erect furnaces and burn such refuse, or carry it out to sea, than that they should thus employ it in fouling their own nest for generations yet to come."

The subject has been under discussion in the Health Committee, where a letter from Dr. Trench, in reply to certain statements of Dr. Stallard, was read. The result was, that the Health Committee has wisely resolved to ask the president of the British Association to name two scientific gentlemen to investigate the matter. This was done at Dr. Trench's suggestion, although he stated that such sites as those based on ashes are healthy; the slow smouldering process of Eremacausis, or combustion at common temperatures, so disposing of the organic matter as to obviate all danger to the health, as completely as if such matter were

burnt in a furnace. Does it? That seems to be a serious question. The heating of dung at common temperatures will no doubt rot such matter, and ultimately dispose of it as completely as if it were burnt in a furnace; but during the process what takes place? It is a ticklish word, "Eremacausis," to trust to in such a case, however different the process may be from the common heating of dung at ordinary temperatures. Hydrogen is an indomitable volatiliser in its stinking combinations with sulphur, phosphorus, &c., although it may, under various circumstances, quietly associate with carbon into liquid or even solid forms, as well as gaseous, too, in such slow processes as those indicated. No doubt oxygen, also, may convert it into harmless water; but the whole subject needs more light to be shed upon it, and meantime we still regard the casting of midden-heaps into sites for houses as a dangerous practice.

WEST HAM SEWAGE.

The West Ham Local Board of Health, being under statutory obligation to discontinue the discharge of sewage into the River Lee at Bow Creek, have determined to apply forthwith for Parliamentary powers to enable them to carry out a scheme prepared by Mr. Lewis Angell, engineer to the Board, for lifting and conveying the entire sewage of the district a distance of about four miles from the present pumping-station, to a farm at Little Ilford, which the Board proposes to purchase for irrigation purposes.

CEMENT FROM GAS LIME.

Only a few months ago there appeared in the pages of the *Builder* a notice of the application of gas lime to the manufacture of cement, and its use for plastering and decorative purposes. I am now in a position to report that the Prideaux cement has been tested in a variety of ways, and bids fair to become an important manufacture. In Sheffield upwards of 700 tons of gas lime have been worked up. The larger part has been applied to walls and floors, hearthstones, and mantelpieces. Of the latter, about 200 have been moulded and sent out. In four of the busiest parts of the town causeways have been paved by laying the cement with a certain proportion of broken slags from the neighbouring furnaces. These have stood the late rains very well, and are likely to come into close competition with the asphalte usually employed. Perhaps the most happy application of this new material is for floors and roofs. Old boarded floors of warehouses have been covered with about an inch layer, and even in workshops where polishing machinery keeps everything in vibration, the Prideaux cement stands intact. I have daily inspected the roof of a shed which had been covered with the cement. Upon a light frame of wood the material was laid on and trowelled to a smooth face, and in the space of twelve hours it was hard enough to bear standing upon. The rain-water now washes over it without the slightest trace of white particles, nor is there any alkaline reaction to be discovered on the hardened surface. The smoothness of walls and plinths moulded with the Prideaux cement is very striking, and must recommend it strongly to builders.

Now, it may be asked, what is the composition of a cement which possesses these useful properties? It is not a Portland or a Roman cement, although some hydraulic characters are very distinct. It does not set so quickly, but allows more time for finishing up the faces of moulded work. It is far from common mortar; for without any sand it can be formed into blocks which set hard throughout. A piece of a mantelpiece which had been made some six months, gave the following results upon analysis:—

Carbonate of lime	69·08
Sulphate of lime (hydrated)	22·63
Calcic hydrate	1·36
Calcic sulphide	*trace*
Insoluble matter	6·50
Alumina and oxide of iron	·45

It is obvious from the above that the setting must at first be due to the combination of water with the dehydrated calcic sulphate, or, in other words, the plaster of Paris formed by the calcination of the cement. The quantity of caustic lime which is present in the cement keeps the plaster of Paris always fresh, that is dehydrated, until mixed with excess of water employed at the moment of using it. This will account for the fact that the cement does not lose its qualities by keeping, as the hydraulic cements do. After the plaster of Paris is set, the caustic lime goes on absorbing carbonic acid, and thus indurating the mass in the ordinary manner of lime mortars.

This will be better understood by the following partial analysis of a sample of the cement ready for use:—

Sulphate of lime (dehydrated)	17·46
Caustic lime	54·00
Alumina and oxide of iron	5·00
Insoluble residue	4·15
Hygroscopic water	·24

Now when it is considered that such a material is made from a waste product of a most offensive kind, this invention deserves every fair trial of its merits. Gas lime is a necessity if the best and purest gas is wanted. Only the expense and annoyance of its removal drove London gas companies unwillingly to replace it partly by the ferric hydrates. It is pretty certain that with a market for the waste product they would gladly return to lime purifiers, and it may be predicted that the Prideaux cement manufacture will surely bring on this revolution.

William Baker,
Associate Royal School of Mines, London.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

At the last meeting, on the 23rd ult., seventeen members were elected, and numerous donations were announced, including one of 30*l.* from the Earl de Grey and Ripon, towards the Illustrations of Fountains Abbey, in the forthcoming part of the *Collectanea*, and one of 5 guineas from the always-liberal Sir William Tite, C.B.

Exhibitions were made by Mr. Baily of several objects recently found in London, amongst which were some ink-horns, with the arms of Charles X. of France, and thirty silver coins of Ethelred, detached, nearly perfect, from an immense agglomeration of decayed silver money, found in St. Martin's-le-Grand; and by Mr. C. Brent, F.S.A., of a pair of three-rowel spurs. A paper by Mr. Cuming, on the cross-tau in painted glass, was elaborately illustrated by drawings by Mr. Watling, of Stonham, principally selected from Southwold Church. Mr. Dillon Croker, F.S.A., read an elegant paper on "The Legends of the Wye."

The next meeting will be held on December 14th, at eight o'clock, when a paper by Mr. Charles Rœssler, of Havre, will be read, "On a Roman Pavement discovered in August last in Lillebonne." He states that the position in which scientific societies find themselves in France precludes the possibility of any record of this discovery being made there; and the council have, under the circumstances, yielded to his desire that such record should be made in their journal.

THE "TENDER" SUBJECT.

Sir,—Your article entitled "On Several Subjects: Some of them Serious," is extremely interesting. Will you allow me to ask a question or two as to the appointment of quantity surveyors? The builders say that they, and not the architect, should appoint the surveyor; or that one surveyor should be appointed by the builders and another by the architect, and the quantities should be based upon their joint and agreed calculations. The point upon which I wish information is, how, in this case, can an architect keep from the builder the list of firms who are to tender? My own experience is that when builders know who are to submit estimates, they frequently arrange between themselves who is to have the work, and the lowest tender is the sum which a builder is willing to receive for the work, plus other sums to be paid by him to other builders to keep them out of a real competition.* In my own practice, I would, if I knew how, and could properly protect my client, allow the builders to appoint the surveyor, subject to my approval of him as a man who would not be likely to take the quantities in excess; but I am afraid that if it were a rule that the appointment of the surveyor was entirely in the hands of the builders, the surveyor who took out the quantities most "full," as it is termed, would have the largest practice.

The only remedy which I can suggest to prevent the various anomalies which occur with regard to quantities is for the architect to appoint the surveyor, and to make the bill of quantities part of the contract; so that any error discovered in them should be allowed for in the builder's final account,—that is to say, any omission in the quantities should be made an extra to the builder, and any excess in the quantities should be deducted from the contract amount, or treated as omitted work.

H. A. B.

* Can our correspondent give us proof of any such arrangement actually made?—Ed.

Sir,—I am surprised to see the discussion in your paper on the estimates for Nos. 3 and 5, Buckingham Palace-road, because there is in reality nothing very unusual in the case. All connected with the building trade, or who read your paper, must be aware of the immense difference in the tenders for almost every job competed for. Now I am very anxious to know what explanation the builders themselves can give of the matter, and will therefore briefly dispose of the points stated by your correspondent "Audi Alteram Partem."

First of all, then, it *is* my practice to employ some one to take out the bills of quantities, but in this case it was not possible, in consequence of the short time allowed for preparing everything and commencing the work. Plans had to be prepared, specification drawn up, bills of quantities delivered, and the estimates received, all in *three* weeks; nor had I any power to alter this. There was no favour shown; all had the bills of quantities at the same time, and were therefore in the same position.

Secondly.—The few items cited by your correspondent were errors of the lithographer, and were explained to many of the persons who applied for the bills of quantities. They were, however, mere trifles, and could have made very little difference in the amount of the estimate; indeed, so small that it was thought better to treat with the successful competitor respecting them, than cause any delay in issuing the document. My own estimate for the work was 1,300*l.*, which I thought would be a fair value for the job. I am still as much in the dark as any one else as to the cause of the wide diversity of the estimates, and wish some one would enlighten me.

John Dale.

Sir,—I am very glad indeed to see by your leading article of this week's issue that your able pen is now pointed and directed towards unveiling that which, I am convinced, without your weighty and time-honoured influence, would remain a discreditable mystery. I trust, for the sake of our profession at large, and that highly honourable and intellectual body of men (the builders), you will not let this "tender" subject rest without a solution.

I am certain you will not get the truth from ——, and that from this source the mystery will never be revealed to daylight or properly ventilated; but, on the contrary, nothing but dark and still darker shadows will be the result of applying there. It is, indeed, a good thing for the public and our profession generally that your editorial eyes are always open to correct these abuses, and I trust they may ever prove a terror to evil-doers.

A Thorough Believer in the "Builder."

P.S.—I enclose my card, in case you wish for any information I could give.

WRAYSBURY CHURCH TOWER AND SPIRE.

Sir,—In your last you say you should like to know if all the builders were supplied with quantities, &c. The great discrepancy in the tenders naturally calls for some inquiry of this sort, as it seems to reflect on some one.

In justice to the architect, who is a stranger to me, except by reputation, I would say, never was a fairer competition. Quantities were not officially supplied.

I saw the advertisement in your journal first, and was also invited to tender by the vicar of Wraysbury: having just completed the reconstruction of the parish church, Windsor, satisfactorily, he said he should like me to do this. I took my quantities from the drawings, which were lying at Wraysbury for the purpose. I know quantities could be obtained, but have not seen them. Those quoted by you seem pretty correct, except the Bath stone. I do not make so much by 1,484 cubic feet, and still could not do the work for less than my tender, 1,399*l.* In fact, from experience, I can say the work, according to the plans and specification, is honestly worth that sum.

E. W. Kelly.

*** A number of other letters on this subject reached us too late for consideration.

"ARCHITECTURE GIVEN IN."

Sir,—I have just now found the following amusing advertisement in a newspaper:—

"The New Education Act.—Economical, Substantial, and Well-arranged School-buildings.—Messrs. CUT & RUN are prepared to contract for the erection of New Schools, or for the enlargement of existing Schools, at the rate of from 2*l.* 15*s.* per head, according to accommodation and situation. The plan, specification, and superintendence (by an experienced and highly competent architect) included. Teachers' residences will also be contracted for at proportionably moderate cost. Speedy completion guaranteed.—Address, ——, Newport, Mon."

A tailor keeps a poet on the premises, why should not builders keep An Architect?

BRIBES.

SIR,—*Apropos* of your remarks relating to nefarious practices in our profession, curiously enough, the same morning on which I received your paper I also received the enclosed note:—

"Dear Sir,—I should be very pleased at another time to give you an estimate, if you might feel disposed to put me in the way of one. Hoping it would be more profitable than the present one, Yours faithfully, * * * *

P.S.—I have made you a small present of 5*l.* for your kindness and attention to my payments throughout the job, hoping you will accept it."

This contractor was introduced to me by my client. It is the first business I have had with him. The accounts have yet to be passed by me. Need I add that I returned the money at once, in a letter, expressing my surprise, and pointing out to him that it is as wicked to try and bribe, or to throw gold-dust into an architect's eyes, as it is to bribe a judge in court; that the architect occupies a similar position between the employer and employed; and expressed a hope that he would give up this wicked system?

I fear these practices are too common between architects and builders. Indeed, I know some men who not only take gifts from builders, but who tell the parties tendering to include so much money in their estimates for themselves. Especially is this done when architects offer their services gratuitously, which, being interpreted, often means getting their commission from the contractor, instead of having it direct from the client.

I wish some of the leading members of the profession would take the matter up and see if something cannot be done to purify the profession in this respect, and remove the misplaced stigma which overhangs those who act honestly in these matters. Many thanks for your kindness in ventilating the subject in your paper.

HONESTY.

THE WANT OF ARCHITECTURAL INSTRUCTION IN MANCHESTER.

SIR,—In reading the account of the annual meeting of the Architectural Association in your paper, I was much struck with the many opportunities afforded to London pupils for the study of their profession. Happening to be a pupil in Manchester, I could not help feeling what a great boon a course of some such lectures as those of which the Society gives a list would be to the many pupils in Manchester, who are desirous of mastering their profession, but who are strangers to any such facilities as those enjoyed by London pupils.

Of the many able men who constitute the Manchester Society of Architects, are there none who are willing to give up a little of their time in delivering lectures suitable to architectural pupils, and could not they bring their influence to bear upon opening a class, where instruction would be given in the different branches of an architect's education? I feel certain that anything of the sort would be not only welcomed but warmly supported by the pupils in Manchester; and if some such plan were only tried, I have no doubt that it would, by its complete success, entirely compensate those who might be the originators. If the members of the Society would ascertain how many even of their own pupils would be willing to attend and support such courses of lectures and classes, they would, I think, find that the number would be quite enough to give the plan a trial; and if it once became known that such an opportunity existed, no doubt many who are not pupils of members of the Society would avail themselves of it.

By kindly inserting these few remarks in your widely-circulated peper, perhaps this subject will be taken up by those who will use their influence in supplying a want that is grievously felt in Manchester.

A MANCHESTER ARCHITECT'S PUPIL.

MEMBERS OF "THE INSTITUTE" AND THE PROFESSION.

SIR,—There are two or three questions now prominently before the public, most seriously affecting the interests and well-being, I might almost say the future existence of the profession, as also the position and dignity of its members; and it has occurred to me that it might be well to bring them again under the notice of your readers, in order that some discussion may take place, with a view to putting matters on a more satisfactory footing.

In the first place, the subject of architects' charges, and the retension of their drawings.

A recent case (Ebdy *v.* M'Gowan) has been decided against the architect, his claim on the plans being disallowed; and, although it appears to me this was not a good case to contest (as it is doubtful, when no visible result was obtained by the employer, whether a claim could be established), still the effect of such a decision is to fix the idea in the public mind that an architect has no right to retain his plans under any circumstances.

If this is the *law*, it had better be settled at once, because then architects can protect themselves, by making it a part of their agreement with their employers, that they should retain their drawings, which most sensible men would do, knowing well the amount of extra trouble (and probably disputes) which will arise, if the original plans go out of their own possession; or else they would have to charge, in self-defence, a higher rate than 5 per cent.

Besides which, if an architect has no right to retain his drawings (which are merely the instruments by which he directs the erection of a building), what right has, as your correspondent puts it, "a sculptor to keep his models, or a solicitor the drafts of deeds, &c.,"—and where is the line to be drawn?

It would appear, from the report of this trial, that a solicitor has no right to retain the draft papers when a case is terminated by his client giving it up; but the ordinary practice is, I believe, for lawyers to keep both drafts and deeds, and all papers involved in getting up a case, instructions to counsel, &c. An engineer's or iron-founder's drawings, patterns, and models are a similar instance, being the stock-in-trade also; and if they were to be claimed, he would have to charge a very different rate for his work.

Of course, the public are anxious to get all they can for their money; but why should architects fare differently to other practitioners?

The chief reason is, I fear, that they let themselves down, and do not maintain their proper position. I am not speaking of second or third rate men only, but leading members, and even Fellows of the Institute.

With regard to the "Barry case," it will be a very great mistake, in my opinion, if Mr. E. M. Barry (as stated in your journal of Saturday last) has decided on giving up his property at the arbitrary demand of the Government, and I should not comply with it were I in his position. In fact, if judgment be allowed to go by default in this manner, it will be much more difficult to contest a case successfully hereafter. Nothing would induce me to give up the drawings, under such circumstances, unless absolutely obliged.

In the second place, the quantities question, and commission on contracts.

Whatever may be the custom in London, it is no secret that in the provinces it is a common thing for "Fellows of the Institute" to take out their own quantities, and, in some instances to receive payment from the builders, by way of a percentage on the amount, charged at the end of the bill, and without their client's knowledge; the percentage varying very much, and frequently in an inverse ratio to the completeness of the calculations; so that, whilst competent surveyors willingly take them out at 1½ per cent., some incompetent architects (or their clerks) commonly charge 2½ per cent.

Of course, they would plead that the customs of provincial towns are different from those in London, and that the rule prevailing there, of quantities being taken by independent surveyors, would not spply; but I should like to know whether the clause in the declaration, signed by members of the Institute, on election, "that they will not receive or accept any pecuniary consideration or emolument from any builder or other tradesman, whose works they may be engaged to superintend," does or does not apply to an architect receiving payment for quantities.

Such men, too, are not always above taking a commission also from contractors, large or small, and from tradesmen supplying the various articles required, such as ironmongery and fittings of various kinds, many of whom are in the habit of making such allowances in the ordinary way of business.

Now this is the sort of thing that brings the profession into disrepute, for the public are not able to distinguish always (perhaps not often) between the man who will do these things and one who will *not*. Therefore they are all thought to be much about the same, unless in certain exceptional circumstances, where the character of the architect or peculiar events have enlightened the mind of the public.

So dense, indeed, is the ignorance on this subject, that in some instances where an architect stands out for the usual commission, and no per centage from contractors, he loses the work, and has the mortification of finding himself underbid by men who are not so scrupulous. I could name instances where this has been done by Fellows of the Institute.

I would ask, of what use is it to make rules that members are not to do such things, and wink at their being done? Would it not be better for the council to expel any Fellows or Associates who transgress these or other rules?

This would put the Institute on a higher level than it at present occupies, and would make it a real distinction to belong to it, instead of, as now, being no guarantee from such objectionable practices.

If this were done, I would promise them they would gain thereby at least one member, in the place of some they might possibly lose.

E.

TAR PAVEMENT.

IF the ground is well rammed, the specification of pavement I sent you will give satisfaction. It does so here, where it replaces gravel paths. It is not usual to prepare a foundation for York flag, nor is it more necessary for tar pavement for footpaths.

THOS. H. METHVEN.

Gasworks, Bury St. Edmund's.

WANTED, A LIFE-BOAT.

SIR,—It has occurred to me, and I doubt not that others have thought the same, that all who are engaged in the various professions and branches relative to building, from the architect to the labourer, could and would further the laudable efforts of the Life-boat Institution, by subscribing to a fund, so as to present it a boat and all fittings. Many professions, trades, and societies have done so, and surely the builders will not be one of the last to do such a good and noble action. I shall be glad to forward my mite or help in the cause if the matter be taken up.

LIFE BUOY.

CITY TOWERS.

SIR,—Will you use your influence to prevent an act of Vandalism? The beautiful church of St. Mary Aldermary has, by the construction of Queen Victoria-street, been brought conspicuously into view. Its tower is unique, and is one of Sir Christopher Wren's finest works. Can it be believed that the Metropolitan Board of Works have erected a huge board, announcing that the piece of land (only a few yards in extent) between the tower and the street, is to be sold or let on building lease? Comment is needless.

S.

BULLIVANT'S PATENT SASHES AND FRAMES.

THE objects endeavoured to be attained by this invention, to which reference has been made in our pages, are the exclusion of air and dust more perfectly than any of our ordinary methods have hitherto succeeded in doing, and the giving of greater facilities for cleaning, painting, and repairs. The weights, instead of being attached by lines to the sash in the ordinary way, are hung to a movable guide-bar, which is of the same length as the sash, and travels in a groove partly in the sash and partly in the pulley-stile. This guide-bar has attached to it a spring fastening running its entire length, which keeps it constantly tight-pressed against the pulley-stile and sash-stile, and two other small springs which keep it firmly home to the back of the groove in the pulley-stile, with the view of making the sash air-tight. A single screw passes through the centre of the side of the sash when in work, retaining the guide-bar firmly in its place. When this is removed, the weight in falling draws the guide-bar out of the sash, which is then entirely clear of the frame, both inside-bead and parting-bead being dispensed with. Any sash thus filled can be lifted out for cleaning by an ordinary servant; and the same facility applies in case of re-painting, with the advantage that as no beads have to be removed, no repairs to the painting of the frame are necessitated. In expensively-decorated buildings this is a point of importance.

The patent also includes an improved arrangement of pulleys. The ordinary cases are dispensed with; a screwed spindle passes through the head of the frame from side to side, upon which travel free the two grooved rollers, either of iron or brass, that carry the lines, the result being that no amount of wear interferes with the easy action of the sash; and there is this contingent advantage, that a Holland blind, if required, can be introduced into the head of the sash frame between the rollers, and be thus entirely concealed from view when out of use. The lines travelling in the groove which receives the bar are unseen from the front, and are not so expensive in first cost.

The danger of cleaning and painting windows from the outside now daily incurred, involving, as the police returns show, many serious accidents, is by this patent entirely avoided.

ARCHITECTURAL UNION COMPANY.

THE report to be read at the thirteenth general meeting of shareholders, to be held next Wednesday, the 7th, states that "The Architectural Exhibition Society have, since the audit of 1869, discharged the rent due for the exhibition of that year, but have not paid any of the rent due for the year 1870, amounting to 200*l.*, which causes the large arrear shown in the balance-sheet." The number of shares on the register is 1,037, upon which 10,370*l.* have been paid. The yearly account is made up to the 28th day of September last, inclusive, and the directors recommend the payment of a dividend of 11*s.* per share, free of income-tax, which will amount to 570*l.* 7*s.*, leaving (in addition to 36*l.* 5*s.* belonging to the Auxiliary Donation Fund, and 8*l.* 10*s.* for unclaimed dividends) a balance in hand of 83*l.* 4*s.* 9*d.*

YOUR NEIGHBOUR'S MUSIC.

SIR,—It has come within my experience that when all other methods failed to stop the nuisance complained of by your correspondent, cutting off an inch from the ends of the joists—of course when they run at right angles to the wall through which the sounds are transmitted, has succeeded. The sound is, in fact, generally "conducted" from one house to the other by the floors, and hence the remedy is obvious.

E. INGRESS BELL.

*** In the case in question the joists run from front to back.

VALUE OF LAND.

MR. THOMAS BRASSEY, contractor, last week bought the Heythrop Park Estate, near Chipping Norton, Oxfordshire, the purchase-money being 113,200*l.* The estate comprises a mansion (damaged by fire in 1831, when in the occupation of the late Duke of Beaufort, since which period it has not been restored), seated in an extensive deer park, adorned with timber trees, and surrounded by several farms, with good houses and homesteads, embracing a total area of about 3,500 acres. The estate was sold under the direction of the Earl of Shrewsbury.

Liverpool.—At the Sheriff's Court, in Liverpool, before J. J. Aston, esq., Q.C., as assessor, and a special jury, a case, Paterson against The Cheshire Lines Committee, was heard. It was a claim in respect of a shop in Boldstreet, under which the Committee had given notice of their intention to tunnel. The premises were old, and consequently the valuations proceeded on the assumption that it was